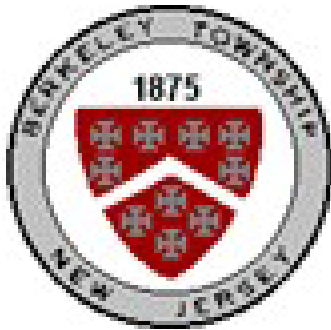


Revised to November 19, 2012 by T&M Associates

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BERKELEY TOWNSHIP OCEAN COUNTY, NEW JERSEY

UTILITY SERVICES ELEMENT & CAPITAL IMPROVEMENT PLAN

IN SUPPORT OF

2009 TRANSFER ELEMENT TRANSFER OF DEVELOPMENT RIGHTS

Adopted _____, 2012

Capital Improvement Plan & Utility Service Plan |



Berkeley Township Planning Board

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The original of this master plan element was signed and sealed in
accordance with N.J.S.A. 45:14A-12.

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Berkeley Township Transfer of Development Rights Program
**Utility Service Plan
& Capital Improvement Plan**

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EXECUTIVE SUMMARY

OVERVIEW

The Berkeley Township Transfer of Development Rights Program has evolved over the past six years, in conjunction with and as a prerequisite to the Township's efforts to obtain Plan Endorsement and facilitate the redevelopment of a severely underutilized and blighted brownfield site into a mixed-use Town Center. The TDR Program is designed to be relatively easy to participate in and to administer in comparison to programs elsewhere in New Jersey. The Program is described in detail in the Transfer of Development Rights Element (TDR Element), which is based upon a Real Estate Market Analysis (REMA) and is regulated by a Development Transfer Ordinance (DTO). The program starts with a balance between the credits generated by the five forested Sending Areas and the capacity of the four Receiving Areas to support additional development within a density and intensity that is acceptable to the Township. This Utility Services Element and Capital Improvement Plan provides the basis upon which the capacity for water supply, wastewater treatment, vehicular and non-vehicular circulation and stormwater management is planned and funded to support the additional density that is projected in the TDR Element.

The Utility Services Element and Capital Improvement Plan (USE-CIP) is introduced in the following Section, which identifies the Sending and Receiving Areas and describes the types of development planned for each receiving area based on the TDR Element and REMA. The Utility Services Element follows with a detailed breakdown of water, sewer, transportation and stormwater infrastructure needs projected for the four Receiving Areas. The CIP identifies infrastructure improvements expected to be required to support the build-out of the Receiving Areas and estimated the costs so that they can be coordinated as build-out progresses.

INTRODUCTION

STATUTORY BASIS

On March 29, 2004, the New Jersey legislature passed the State Transfer of Development Rights (TDR) Act, the country's first statewide TDR enabling legislation. In December 2004, the New Jersey Department of Community Affairs announced that Berkeley Township was one of six communities selected to participate in a state sponsored TDR demonstration program. Upon being selected to participate in the program, the Township Council authorized the initiation of a TDR program under the State's Transfer of Development Rights Act.

The purpose of the TDR program is to provide an incentive-based process for permanently preserving environmentally sensitive and open space lands that provide a public benefit through their natural state (sending areas). The TDR provisions are intended to preserve land by transferring the development rights associated with a parcel of land in a sending zone to a pre-determined receiving zone. The Receiving Areas are delineated based on their ability to support additional growth and density due to the availability of infrastructure and the absence of severe environmental constraints. The Receiving Areas are also reflective of the Township's vision for guiding growth to well-planned and compact centers and nodes.

Article 17 of the Municipal Land Use Law, "State Transfer of Development Rights," requires a municipality to adopt a utility service plan and capital improvement program, and prepare a real estate market analysis (REMA) in support of a development transfer plan prior to the adoption of a development transfer ordinance. This document has been prepared in satisfaction of the MLUL requirements. The Berkeley Township 2009 Development Transfer Plan is available as a separate document.

PROGRAM OBJECTIVES

Berkeley Township conducted a public visioning process in 2002-2003 to identify long-range goals for the Township's physical, recreational, business, and community development particularly within the eastern mainland section of the Township. The visioning process focused on determining areas for development and conservation, the desired and appropriate locations and intensities of land uses, and community design. The process resulted in a 2020 Vision Statement that departs from trend by establishing centers and nodes as the primary targets for future development while preserving a substantial portion of the Township as open land. The TDR program is just the latest in a series of actions that the Township has undertaken to realize that vision.

The specific objectives of the TDR program are to:

- Preserve undeveloped wooded areas that are being incrementally developed in an unplanned fashion and without public infrastructure;
- Guide that growth to well-designed centers and nodes along the Route 9 corridor that can be efficiently served by public infrastructure;
- Develop and enforce design standards to ensure that the Receiving Areas develop in a manner that provides quality working and living environments, maximizes circulation and mobility options, and generally benefit the Township's social, environmental, and economic quality of life.

SENDING AND RECEIVING AREAS

Berkeley has established five sending areas and four Receiving Areas (two town centers, an industrial node and one corridor node) as outlined in Tables 1 and 2. All of the areas are located in the eastern mainland portion of the Township as illustrated in Map 1. The total acreage shown within the Sending Areas (Table 1) includes lots owned both by private owners and by the Township, which when combined will preserve consolidated areas of wooded habitat. The tables reflect total acreage in both the Sending and Receiving Areas, but not all properties in the Sending Areas are vacant and will generate development credits. In addition, some properties within the Sending Areas are already developed will not be receiving development credits, but are included because they are part of areas with undeveloped land.

Table 1
TDR Sending Areas

Sending Zone	Total Acres	Current Zoning
AA	348	R-150, R-400 & RHB
A	88	CR, R-150 & R-400
B	163	R-150
C	71	R-150
D	170	R-150 & R-400
	840*	
	*Includes parcels in both public and private ownership	

Table 2
TDR Receiving Areas

Receiving Zone	Total Acres	Current Zoning	Proposed Zoning
Berkeley Town Center	443	Town Center Redevelopment Plan	Town Center Redevelopment Plan
Town Center 2	92	R-200, R-MF & HB,	Town Center 2 Overlay
Node C	146	CR, R-200, R-400 & CR	Corridor Node Overlay
Industrial Node	79	LI	LI
	760		

Table 3 below, which includes Table 16 from the REMA, summarizes the estimated development by Receiving Area that will be attributed to the purchase of Development Credits and the analysis of affordability of the Credits.

Table 3 Summary of Development per Purchase of Development Credits

Receiving Area	Townhomes	Duplexes	Multifamily	Commercial Floor Space (Sq. Ft.)
Town Center 1 Phase II	140	195	0	0
Town Center 2	46	12	100	150,000
Light Industrial Node	0	0	0	260,000
Node C	316	300	0	0
Total	502	507	100	410,000

**Table 16
Development Credit Bonus & Affordability
Receiving Zone**

Receiving Area	Development Type	Development Credit Shortfall	Development Credit Bonus Ratio	Bonus Development Credits	Development Credits Needed From Sending Zone	Sending Zone Development Credit Cost	Available For Development Credit Purchase	Funds Available For Credit Purchase As Percentage of Credit Cost
Town Center 1 Phase II	Multi-Family (756)	756	3.10	572	184	\$11,985,366	\$13,230,000	110.38%
	Live-Work (13)	13	0.80	6	7	\$469,444	\$520,000	110.77%
Town Center 2	Duplex (12)	12	0.80	5	7	\$433,333	\$480,000	110.77%
	Townhome (46)	46	1.60	28	18	\$1,150,000	\$1,265,000	110.00%
	Multi-Family (100)	100	3.10	76	24	\$1,585,366	\$1,750,000	110.38%
	Commercial (150,000 SF)	65	0.00	0	65	\$4,225,000	\$4,500,000	106.51%
Light Industrial	Industrial (260,000 SF)	14	0.00	0	14	\$910,000	\$1,040,000	114.29%
Node C	Duplex (300)	252	1.30	142	110	\$7,121,739	\$8,375,000	117.60%
	Townhome (316)	271	2.60	196	75	\$4,893,056	\$5,812,500	118.79%
Total		1,529		1,025	504	\$32,773,304	\$36,972,500	

Source: Urban Partners

SENDING AREAS

The five sending areas are located in an area of the Township generally bounded by the Garden State Parkway to the west, Route 9 to the east, Lacey Township to the south, and Beachwood Borough to the north. This section of Berkeley Township is developed primarily with scattered low-density single-family homes and includes institutional uses such as the High School and OCUA Wastewater Treatment Plant, and a large sand quarry. Five sending areas – AA through D – are generally large tracts of undeveloped, residentially zoned land that are largely forested and not served by roads or public water or sewer infrastructure. These areas consist of approximately 5,000 small tax lots and paper streets as a result of early 1900's subdivisions that were never developed. When taken together the five sending areas encompass approximately 840 acres of forested and open lands that include Threatened Forest Habitat/Rank 3 and wetlands.

Among the approximately 5,000 tax lots that comprise the 840 acres in the five Sending Areas are 1,973 tax lots that are privately owned and total 244.2 acres. Those 1,973 tax lots translate into 333 groupings of

lots which, in turn result in an allocation of 429.71 development credits based on existing zoning within the Sending Areas.

The balance of the tax lots in the Sending Areas are already owned by the Township. As the REMA developed it became evident that inclusion of the Township lots would generate more development credits than the Receiving Areas could absorb. It was determined that the Sending Areas would be adjusted to enable consolidation of public and private lots into contiguous forested areas that would be preserved from development through a combination of public ownership of lots and paper streets and private lots deed-restricted from development through the sale of their development credit. For that reason it was critical to the success of the program that every single privately owned lot have some transferable value (credit or fraction of a credit) based on the zoning currently in place.

The Township's 2008 Land Use and Circulation Element has clearly defined the limits of future infrastructure extensions in this part of the Township thereby differentiating those areas that can reasonably be expected to be supported by public infrastructure and therefore built-out; and those that are more suitable for conservation through the TDR program - the sending areas. The land use element designates sending areas AA through D as Conservation Residential Districts. However, during the development of the Real Estate Market Analysis, it became evident that the TDR program, as applied in Berkeley's situation, would be most effective if the sending areas were not down-zoned to Conservation Residential (3 acre lots) so as to maintain the market value of the sending credits. This position received unanimous support at the TDR meeting with the sending zone property owners held on March 29, 2010, including several local builders who had previously vigorously opposed TDR during the hearings on the 2008 Land Use and Circulation Element because of the downzoning.

RECEIVING AREAS

The Township has identified two Town Centers, an industrial node and one corridor node to serve as Receiving Areas. As seen on Map 1, the Receiving Areas are located at strategic points along the Route 9 corridor. Each of the areas is developed to a lesser or greater degree with residential, commercial, and/or industrial uses. The most northerly zone (Berkeley Town Center) and the most southerly zone (Corridor Node C) are impacted by threatened forest habitat. All of the areas are within the OCUA sewer service area and in either the Aqua New Jersey or Berkeley MUA water service areas; and have the potential for either infill development or comprehensive redevelopment. Parcels eligible for additional density through the TDR program must be located within one of these Receiving Areas.

Berkeley Town Center, the northernmost and largest receiving zone, covers 443 acres immediately south of the Beachwood Borough border, north of Mill Creek, west of Route 9 and east of the Central Rail Road of New Jersey right-of-way. The area is currently comprised of the Beachwood Plaza - an obsolete shopping center built in the 1950's, the former South Brunswick Asphalt facility, random retail service uses, an outdoor commercial recreation facility and a salvage yard. Wetlands have been identified along the Mill Creek section of the site (see Map 4).

The concept for Berkeley Town Center - a compact, mixed-use, human-scaled community - was conceived as part of the Berkeley visioning process in 2002-2003. The Township has taken several

proactive steps since then to bring the Town Center to fruition. The Township Council designated the majority of the proposed Town Center as an “area in need of redevelopment” in June of 2003. In 2006, the Township adopted the Town Center Zoning District, which consists of six sub-districts including Mixed Use, Small Scale Commercial, Core Commercial, Residential, Open Space Parks and Recreation, and Environmentally Sensitive. In 2008, the Township adopted the Berkeley Town Center Redevelopment Plan to guide the comprehensive redevelopment of the site.

If fully realized, the combined build out of Phase 1 and Phase 2 of the redevelopment plan has the potential to yield approximately 700 dwelling units and 550,000 square feet of commercial space. Within the Phase 2 portion of the Town Center, 13 parcels in eight ownerships would be eligible to purchase TDR credits to increase density. These 13 parcels total 95.82 acres of land, but increased density would be permitted on only 27.21 acres. TDR credits would provide for an increase in density from 20 dus/acre to 30 dus/acre on 14.95 acres and from 10 dus/acre to 15 dus/acre on 12.26 acres. This would result in the development of an additional 212 residential units—150 high density units (townhomes or condominiums) and 62 units at medium density (duplexes), as well as 422 units “by right”. In addition to the “by right” residential component within the remainder of the Phase 2 area, it is anticipated that additional commercial retail space of approximately 50,000 square feet would be incorporated within the street-level portions of mixed-use buildings fronting on Gladney Avenue or the immediate side streets.

The second proposed Town Center straddles Route 9 from its intersection with Korman Road and Ocean Gate Drive, south to Bow Street. This center is smaller than Berkeley Town Center, consisting of 92 acres. The goal is to forge a strong pedestrian link between the high density residential development on the west side of Route 9 with the commercial area anchored by the Shop Rite supermarket on the east side of Route 9 while promoting better quality design and landscaping, shared parking, and more controlled access to Route 9. With the introduction of a simple street grid, this underdeveloped shopping center has the potential to add 158 dwelling units (12 duplexes, 46 townhomes and 100 multifamily), an additional 140,000 square feet of retail and 10,000 square feet of additional restaurant space in the form of infill development.,

Corridor Node C, the southernmost receiving zone, covers 145 acres and is located primarily on the southbound side of Route 9 in the vicinity of Harbor Inn Road. Other than Berkeley Town Center, this receiving zone has the most potential for new development and redevelopment. It is currently sparsely developed with the predominate use being an abandoned mining operation. Based on existing zoning, the build-out of Node C would approximate 114 single-family residential units (5 units on 3 acre lots in the Conservation Residential Zone; 61 units on 40,000 square foot lots in the R-400 Zone; 26 units on 20,000 square foot lots in the R-200 Zone; and 22 units on 15,000 square foot lots in the R-150 Zone) and 147,000 square feet of commercial space. The build-out under the Draft Corridor Node Overlay District regulations would permit an estimated 300 duplexes, 316 townhouses, and 147,000 square feet of commercial space within the same developable land area. The REMA analysis estimates the added value between the 114 single family homes under existing build-out and the 300 duplexes and 316 townhouses in the Overlay District contingent upon the purchase of Development Credits.

The Light Industrial Node is located at the western end of Hickory Lane in Berkeley Township’s Suburban Planning Area. This 79.3 acre area is generally bounded by the rail right-of-way to the west, the extent of Block 858 lot 46 to the north, Keefe Street to the east, and Northern Boulevard to the south.

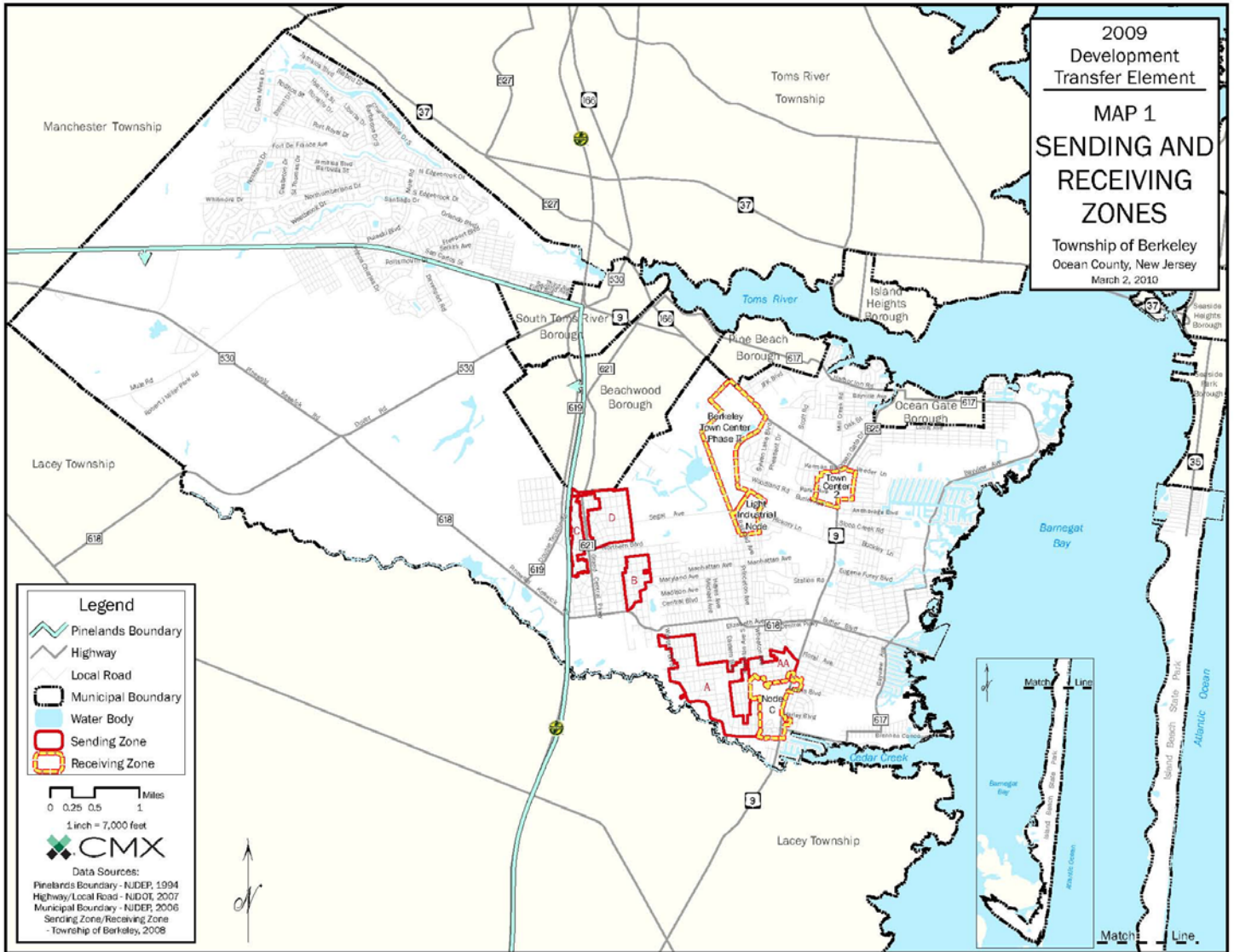
The node includes industrial properties and borders the OCUA across the Rail right-of-way. It is composed of 241 parcels with 11 owners and existing commercial space totaling 127,394 square feet. The following properties, listed by block and lot are proposed for inclusion in the industrial node.

Table 4: List of Properties in Light Industrial Node

Block	Lot(s)
610	31
611	1-32, 33.01, 34, 36, 38.01
612	1
613	1-40
614	39.01, 40.01, 41.01, 42.01, 43.01, 44.01, 45.01
615	1-48
616	1-7, 9, 11, 13-18, 20, 22, 24, 26, 28-46
617	1-12, 12.01, 13, 14
858	46
863	5.01, 5.02, 18.01, 20-22
865	1-19, 21, 23.01
866	1.01
867	1-48
869	1-48

The State Plan sets forth guidelines for heavy industrial and commercial/ light industrial node designations. The Light Industrial node proposed above is considered a Commercial/Light Industrial Node.

MAP 1 Sending and Receiving Area Locations



I. UTILITY SERVICE PLAN

The utility service plan outlines the need for and general location of infrastructure elements that are considered necessary to support the projected development of the Receiving Areas as a result of transferred credits. The utility service plan specifically addresses potable water, wastewater collection and treatment, stormwater management, transportation and public facilities.

POTABLE WATER

Berkeley Town Center, Town Center 2 and the portion of the Industrial Node north of Hickory Lane fall within the service area of Aqua New Jersey (formerly the Berkeley Water Company), a private water franchise (See Map 2). While Aqua owns a well that serves the “Belair” neighborhood on the east side of Route 9 opposite Node C, the land within Node C itself is within the service area of the Berkeley Township Municipal Utilities Authority, as is the portion of the Light Industrial Node south of Hickory Lane.¹

According to Berkeley Township’s Township Engineer, water is provided to the retirement communities of Holiday City and Silver Ridge, as well as the Manitou Park Rehabilitation Area by United Water Co.; the Northern one-third of Bayville by the Aqua Water Co.; South Seaside Park by the Shore Water Co.; the southern one-third of Bayville by the Berkeley Township Municipal Utilities Authority (BTMUA). All named water companies with the exception of the BTMUA are separate privately owned operations.

Supply capacities for each of these providers is shown on Table 6.

Water Sources

Table 5 shows the Public Community Water Supply wells within Berkeley Township. According to the Berkeley Township Municipal Utilities Authority (BTMUA), many residents and businesses in the portion of Bayville east of Route 9 still obtain water from privately operated wells on individual lots. However, the BTMUA issued a Water Distribution Map (April 2011), which shows infrastructure in most developed areas east of the Parkway (see Map 1A). This map shows that public water lines now serve many of the neighborhoods in the BTMUA’s service area in Pinewald and Bayville

The BTMUA’s Water Supply Master Plan estimates saturation development in the MUA’s service area to be approximately 7,800 units (existing and new). This estimate

¹ Verified in a phone conversation with James C. Barbato, PE of Aqua NJ Water Company on October 19, 2010



does not include any development in wetland areas shown on United States Geological Survey maps (USGS). During the spring of 1993, the Phase I of the Authority's water system, serving 2,800 of the 7,800 projected units, reached its final stages of construction and was placed into operation. Upon receipt of a 1.2 million dollar loan and \$500,000 grant from the U.S. Department of Agriculture from a grant program initiated by the USDA in 2000 (Water Project 2000), the Authority's system was expanded significantly between 2005 and 2008, mostly in the Pinewald area west of Route 9, with approximately 77,000 linear feet of additional 6.8 and 12-inch diameter water mains installed. These new water lines were installed along streets in Pinewald to reach existing homes with on-site wells and to connect newly constructed homes on scattered lots too small for on-site wells.

The TDR Program will reduce the further build-out of Phase II of the system and confine it to areas of Pinewald that are already developed, as no extensions of water or sewer lines will be made into the Sending Areas, which will become Planning Area 5 through the Plan Endorsement Process. The water capacity originally projected for the areas of Pinewald now to be preserved through TDR will be available for the build-out of Node C and the portion of the Light Industrial Node south of Hickory Lane.

The following table shows the Public Community Water Supply wells within Berkeley Township.

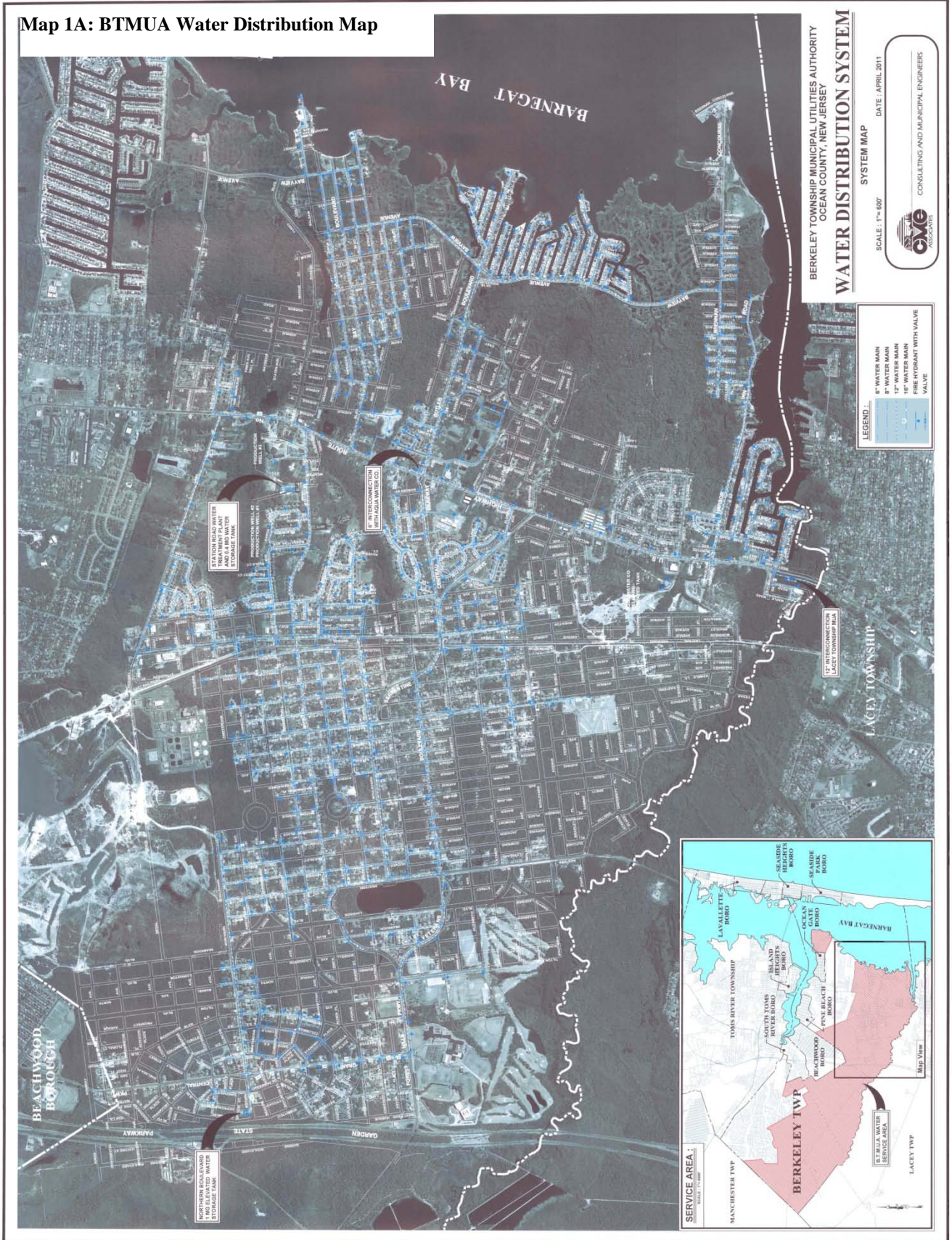
Table 5
Public Water System Wells

Well ID	Well Owner	Name of Well	Location of Well	Completion Date	Aquifer Type
WSWL0000068522	Berkeley Twp MUA	Well 1	Station Rd	2/22/1992	Confined
WSWL0000068521	Berkeley Twp MUA	Well 2	Station Rd	3/3/1992	Confined
WSWL0000176648	Berkeley Twp MUA	Well 3	Station Rd	9/18/1999	Confined
WSWL0000068370	Berkeley Water Co (aka Aquaview Water Co, now Aqua NJ)	Well 3	Rte 9 (Pinewald)	10/23/1961	Unconfined
WSWL0000068484	Berkeley Water Co, now Aqua NJ)	Well 4	Rte 9 & North Ash Ave	5/29/1986	Unconfined
WSWL0000068602	Berkeley Water Co, now Aqua NJ)	Well 5	Rte 9	5/21/1997	Unconfined
WSWL0000070829	Crystal Lake Health Care	Well 1	Lakeside Blvd	1928	Semi-Confined
WSWL0000068456	Crystal Lake Health Care	Well 2	Lakeside Blvd	03/1979	Unconfined
WSWL0000068361	Shore Water Co	Well 1	23rd St & Central Ave	6/22/1954	Unconfined
WSWL0000068411	Shore Water Co	Well 2	23rd Ave	02/1973	Confined
WSWL0000068491	Shore Water Co	Well 3	Barnegat Ave	1/7/1988	Confined
WSWL0000068468	United Water New Jersey	Well 33	Santiago Ave	10/15/1984	Unconfined
WSWL0000068496	United Water New Jersey	Well 34	Mule Rd, Holiday City	11/6/1987	Unconfined
WSWL0000068502	United Water New Jersey	Well 35	Mule Rd	6/8/1988	Unconfined

Source: NJ Department of Environmental Protection (NJDEP), i-MapNJ



Map 1A: BTMUA Water Distribution Map



Supply Capacity

There are five Public Water Supply Systems providing service to the eastern mainland portion of Berkeley Township, at a rate of approximately 23.917 million gallons per day (MGD) at peak demand, as shown in the table below. According to the Department of Environmental Protection, Division of Water Supply, the Firm Capacity means adequate pumping equipment and/or treatment capacity to meet peak daily demand, when the largest pumping station or treatment unit is out of service.

Table 6
Level of Service for Public Water Systems

PWSID	Public Water System / Purveyor	Population Served ²	Firm Capacity (MGD)	Supply Allocation Limit (MGD)	Total Peak Demand (MGD)	Firm Capacity Deficit/Surplus (MGD)
1505002	Aqua NJ Eastern Division (prev. Berkeley Water Co.)	12,000	1.620	1.548	1.456	+0.164
1505004	Berkeley Township MUA	8,960	1.512	2.097	1.286	+0.730
1505312	Crystal Lake Health Care	382	n/a	n/a	n/a	n/a
1505003	Shore Water Company	4,800	0.634	0.435	0.348 (current)	+0.286 (current)
1507005	United Water Toms River	19,431	21.620	23.689	20.827	+0.793
Total		45,674	28.784	30.479	23.917	+1.973

SOURCE: Department of Environmental Protection (NJDEP), Division of Water Supply updated 9/11/2009

Note: To determine monthly and yearly capacities, MGM= (MGD x 31) and MGY= (MGM x 12).

AQUA NJ

The Berkeley Town Center, Town Center 2 and the portion of the Light Industrial Node north of Hickory Lane are located within the Aqua NJ franchise area. It is anticipated that Phase 1 of Berkeley Town Center will develop as a mixed-use core “Main Street” area bordered by three large regional retail buildings and a movie theatre worked into the Center through the use of “liner buildings” to mask the side facades. It is proposed to include 450,000 square feet of retail and restaurant uses, 50,000 square feet of general office use and 70 residential units. The combination of these uses would generate an estimated 58,785 GPD, assuming that the 70 units of Phase 1 will be either townhouses or multifamily/mixed use housing types.

Within the Phase 2 portion of the Town Center, TDR would result in the development of an additional 212 residential units—150 high density units (townhomes or condominiums) and 62 units at medium density (duplexes), as well as 422 units “by

² Source: Office of Smart Growth letter to Berkeley Township, June 17, 2009



right". In addition to the "by right" residential component within the remainder of the Phase 2 area, it is anticipated that development of approximately 50,000 square feet of small, service oriented businesses on the street level of mixed-use buildings near Route 9 will occur as the Town Center transitions from the "Main Street Core" of Phase 1 to the medium density "edge" and the lower density, small lot single family "fringe" areas of Phase 2. This retail space would be incorporated within the street-level portions of mixed-use buildings fronting on Gladney Avenue or the immediate side streets.

The table below calculates an estimated water demand for the Phase 2 Town Center Receiving Area of 103,186 gallons per day (3.198 mgm). This consumption amounts to 38.38 million gallons per year (mgy). The first phase of development would produce an estimated water demand of 21.16 million gallons per year. Combined with the 38.38 mgy estimated for the Phase 2 Town Center receiving area, the entire demand for the Berkeley Town Center is 59.54 mgy.

Table 7
Berkeley Town Center – Phase 2 Receiving Area
Proposed Development and Water Demand Estimate

Residential				
Unit Type	Number of Units	Persons/Unit	Gallons Per Day/Unit	Total GPD
Single Family	80	3.10	232.5	18,600
Duplex	94	3.10	232.5	21,855
2 Bedroom TH	175	1.67	125.5	21,963
Multifamily	285	1.67	125.5	35,768
TOTAL	634		Subtotal	98,186
Commercial				
Type	Square Feet	GPD/SF	Gallons Per Day	Total GPD
Retail	50,000	0.1	5,000	5,000
Restaurant	0	0.1	0	0
	50,000		Subtotal	5,000
			TOTAL	103,186

Source of Multipliers: Regional Plan Partnership, "Watershed Management Area 20 GOZ® Build-out Analysis for Upper Freehold Township and Doctors Creek Sub-watershed", January 2003 (Consumption based on 75 gallons per person per day for residential use and 25 gpd per employee and 1.5 employees per 1,000 sf).

Town Center 2 also falls within the service area of Aqua New Jersey. It is anticipated that at full build-out the water demand generated by the proposed development of Town Center 2 would amount to 13.434 million gallons per year (36,113 GPD / 1,119 MGM). Water lines presently exist in the Route 9, Gladney Avenue, and Locker Street rights-of-way.



Table 8
Town Center 2
Proposed Development and Water Demand Estimate

Residential				
Unit Type	Number	Persons/Unit	Gallons Per Day/Unit	Total GPD
Single Family	0	3.10	232.5	0
Duplex	12	3.10	232.5	2,790
2 Bedroom TH	46	1.67	125.5	5,773
Multifamily	100	1.67	125.5	12,550
	158		Subtotal	21,113
Commercial				
Type	Square Feet	GPD/SF	Gallons Per Day	Total GPD
Retail	140,000	0.1	14,000	14,000
Restaurant	10,000	0.1	1,000	1,000
	150,000		Subtotal	15,000
			TOTAL	36,113

Source of Multipliers: Regional Plan Partnership, "Watershed Management Area 20 GOZ® Build-out Analysis for Upper Freehold Township and Doctors Creek Sub-watershed", January 2003 (Consumption based on 75 gallons per person per day for residential use and 25 gpd per employee and 1.5 employees per 1,000 sf).

The Light Industrial Node is split between Aqua New Jersey (22 acres north of Hickory Lane) and the Berkeley Township MUA (BTMUA) (57 acres south of Hickory Lane). To complete the analysis regarding water supply capacity within the Aqua NJ Franchise Area, it is necessary to add the demand to be generated by the 22 acres within the Light Industrial Node that is north of Hickory Lane at 0.15 FAR (143,748 square feet). Of the 19,500 GPD generated by the entire Light Industrial Node, 5,391 GPD (0.167 MGM, 2.0 MGY) is attributed to the Aqua NJ Franchise Area (143,748 sf x 0.0375 gallons/sf = 5,390.55 GPD) with the remaining 14,109 GPD being attributed to the BTMUA Franchise Area. Aqua NJ representatives do not anticipate additional wells to handle this estimated demand beyond the wells already being planned for the Town Center and Town Center 2. They expect the developer of an approved subdivision on Hickory Lane to the east of the LI Node to extend a water main from the Sylvan Lake residential community and the future developer the 22 acre portion of the LI Node to the north of Hickory Lane to extend that water main up Hickory to serve the new buildings constructed there.

The most significant water supply infrastructure need will be for Berkeley Town Center Phase 2 and the Town Center 2 Receiving Areas, which are in the service area of Aqua NJ Water Company.

The following chart from the NJDEP Division of Water Supply, as updated in March, 2011, shows permitted water supply and demand for Aqua NJ (formally Berkeley Water Company):



Table 9
Available Water Supply Limits – Aqua, NJ
Source: NJDEP Division of Water Supply, Updated to 3/21/11

Water Supply Firm Capacity: 1.620 MGD

	Allocation	Contract	Total
Monthly Limit	48.000 MGM	N/A MGM	48.000 MGM
Yearly Limit	355.000 MGY	N/A MGY	355.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.267 MGD	07/2010	0.189 MGD	1.456 MGD
Monthly Demand	39.265 MGM	07/2010	2.930 MGM	42.195 MGM
Yearly Demand	314.832 MGY	2010	22.995 MGY	337.827 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.164 MGD	5.805 MGM
	17.173 MGY

Table 9 shows the Monthly and Annual Water Allocation for Aqua NJ at the top and the current water demand underneath. Aqua NJ has calculated that based on the estimated development in Town Center Phase 2 and Town Center 2, the required Firm Capacity to build Berkeley Town Center Phase 2 and the Town Center 2 would be 0.418 MGD. The required Annual Allocation to build Berkeley Town Center Phase 2 and the Town Center 2 would be 50.58 MGY. The required Monthly Allocation to build Berkeley Town Center Phase 2 and the Town Center 2 would be 4.32 MGM. When demand figures for Town Center Phase I and the Light Industrial Node are included the total demand in the Aqua NJ service area would be 74.04 MGY and 6.28 MGM respectively. A comparison to the capacity numbers in Table 9 shows that this projected demand would create deficits in Firm Capacity, monthly capacity and annual capacity. When the water allocation permit for Aqua's franchise area was last determined in April of 2011, the limits were not necessarily matched across all criteria for all future scenarios. Since Firm Capacity and annual capacity are lower than needed, an allocation permit application will be needed.

BTMUA

Node C is located totally within the BTMUA service area. The surplus in Firm Capacity in Table 10 below is 0.054 mgd, which translates to 19.71 mgy (0.054 x 365) and 1.64 mgm (19.71/12). Surplus permitted water allocation is 24.9 mgm), and 418.668 mgy, which translates back to 1.147 mgd (418.668/365). Based on this capacity, combined with the corresponding transfer, estimated in the REMA, of 391 dwelling units and 97,121 square feet of commercial space from the Pinewald Sending Areas (all of which are in the BTMUA service area), it is estimated that adequate capacity exists for water supply in the receiving area.



Table 10
Available Water Supply Limits – BTMUA
Source: NJDEP Division of Water Supply, Updated to 6/27/11

Water Supply Firm Capacity: 1.512 MGD

Monthly Limit	Allocation	Contract	Total
	65.000 MGM	N/A MGM	65.000 MGM
Yearly Limit	722.000 MGY	N/A MGY	722.000 MGY

Water Demand

	Current Peak	Date	Committed Peak	Total Peak
Daily Demand	1.129 MGD	07/2010	0.329 MGD	1.458 MGD
Monthly Demand	35.000 MGM	07/2010	5.100 MGM	40.100 MGM
Yearly Demand	263.304 MGY	2010	40.028 MGY	303.332 MGY

Water Supply Deficit or Surplus

Firm Capacity	Water Allocation Permit
0.054 MGD	24.900 MGM
	418.668 MGY

Based on the build-out estimates in the REMA, the preservation of the five Sending Areas will mean that the equivalent of 391 single family homes at 232.5 gallons per unit per day, or 90,907 gallons per day, will not be constructed in Pinewald. Additionally, 7.98 acres and approximately 97,121 square feet of commercial space generating another 9,712 gallons per day will not be constructed in the Rural Highway Business zoned portion of Sending Area AA. The total of 100,619 gallons per day (3.119 MGM; 37.43 MGY) should be subtracted from the projected demand for the Node C Receiving Area and southern portion of the Light Industrial zone generated in the tables below to provide a complete estimate of the future water supply needs from the BTMUA.

Table 11
Node C
Proposed Development and Water Demand Estimate

Residential				
Unit Type	Number	Persons/Unit	Gallons Per Day/Unit	Total GPD
Single Family	0	3.10	232.5	0
Duplex	300	3.10	232.5	69,750
2 Bedroom TH	200	1.67	125.5	25,100
3 Bedroom TH	116	3.10	232.5	26,970
	616		Subtotal	121,820
Commercial				
Type	Square Feet	GPD/SF	Gallons Per Day	Total GPD
Retail	127,000	0.1	12,700	12,700
Restaurant	20,000	0.1	2,000	2,000
	147,000		Subtotal	14,700
			TOTAL	136,520

Source of Multipliers: Regional Plan Partnership, "Watershed Management Area 20 GOZ® Build-out Analysis for Upper Freehold Township and Doctors Creek Sub-watershed", January 2003 (Consumption based on 75 gallons per person per day for residential use and 25 gpd per employee and 1.5 employees per 1,000 sf).



Based on the estimates in the table above, the net demand for water from the BTMUA will either be a savings of 35,901 gallons per day ($136,520 - 100,619 = 35,901$) if the build-out from the Sending Areas is subtracted from the build-out of Node C (the total net demand for the BTMUA would need to add the 14,109 GPD/0.44 MGM/5.25 MGY addressed below for the Light Industrial Node).

The Light Industrial (CAFRA) Node is estimated to generate an additional 520,000 square feet of warehouse and industrial development at build-out. Based on multiplier of 0.0375 gallons per square foot, the estimated water demand is 19,500 gallons per day. The BTMUA is already serving the existing buildings within the industrial park. When the 22 acres at 0.15 FAR (143,748 square feet) north of Hickory Lane to be served by Aqua is subtracted from the total for the Light Industrial Node, the balance of 376,252 square feet of industrial space would need to be served by the BTMUA. The demand will be 14,109 gallons per day (0.44 mgm / 5.25 MGY) on top of the demand generated by Node C described earlier (136,520 gpd/4.23 mgm / 50.785 MGY). The combined demand would increase from 4.23 mgm to 4.67 mgm and be within the total available surplus Firm Capacity of 24.6 mgm (418.668 MGY). Additionally, if the estimated 100,619 gallons per day (3.12 mgm/37.43 mgy) is subtracted based on the water demand being diverted away from the Sending Areas through the transfer of 413 development credits (equivalent of 391 single family homes and 97,121 commercial square feet), the actual estimated demand for water from the BTMUA as a result of the Township's TDR Program would be 1.55 mgm ($4.67 - 3.12$), or 18.6 mgy ($56.04 - 37.43$), which would be 6.8% of the BTMUA's Firm Capacity.

Table 12
Light Industrial Node
Proposed Development and Water Demand Estimate

Commercial				
Type	Square Feet	GPD/SF	Gallons Per Day	Total GPD
Warehousing	220,000	0.0375	8,250	8,250
Light Industrial	300,000	0.0375	11,250	11,250
	520,000		Subtotal	19,500
			TOTAL	19,500

Source of Multipliers: Regional Plan Partnership, "Watershed Management Area 20 GOZ® Build-out Analysis for Upper Freehold Township and Doctors Creek Sub-watershed", January 2003 (Consumption based on 75 gallons per person per day for residential use and 25 gpd per employee and 1.5 employees per 1,000 sf).

WATER INFRASTRUCTURE NEEDS

Aqua expects that the new well determined to be necessary to address Phase 1 of the Berkeley Town Center could be designed to also address the additional capacity needed for Phase 2 of the Berkeley Town Center and could be accommodated at the site of their existing well, pump station and water storage tank within the Town Center Redevelopment Area at a rough cost of \$250,000 (\$150,000 to drill the well and \$100,000 for equipment upgrades to the existing pumping station).



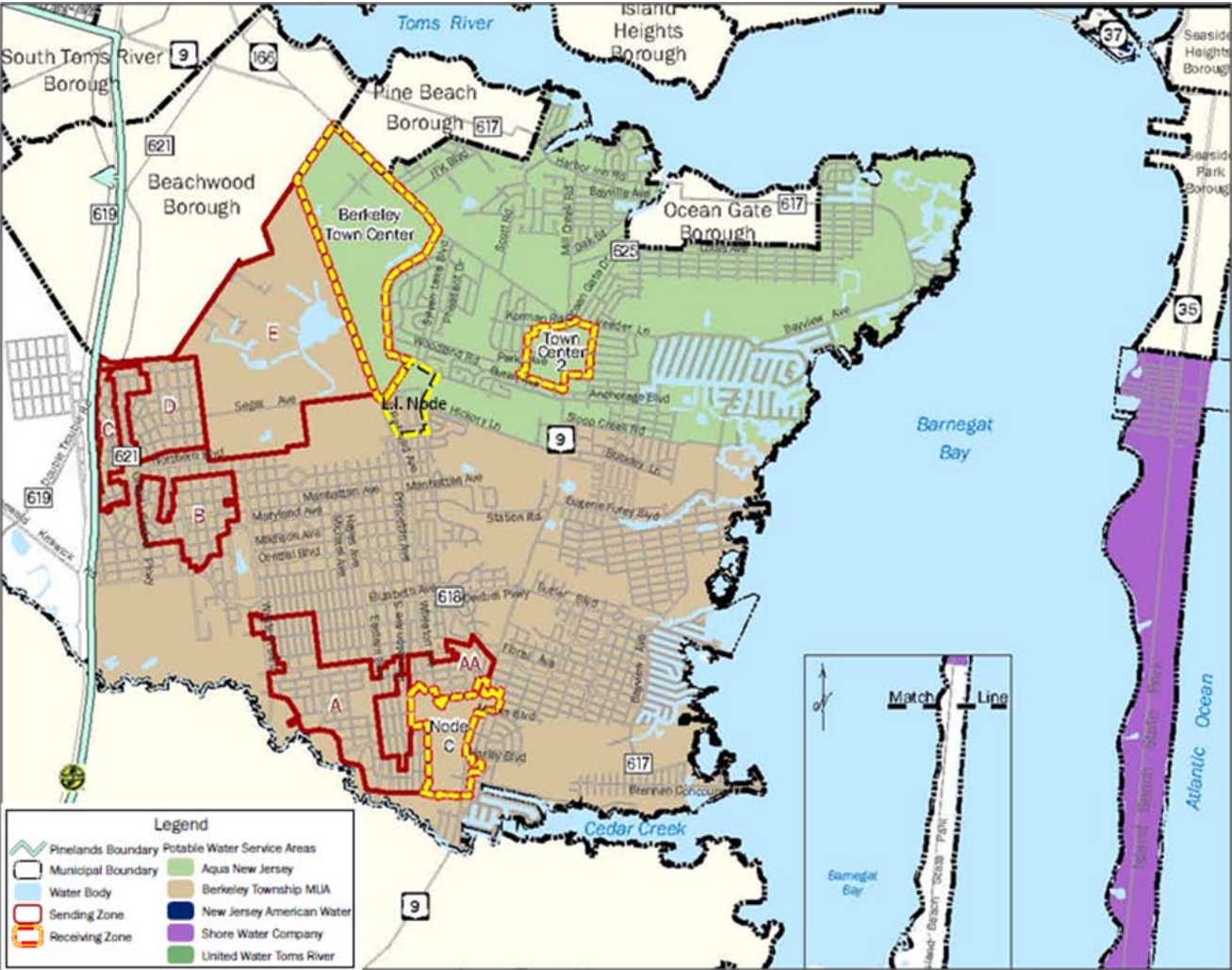
Aqua also owns property on Sherman Avenue within the block occupied by the shopping center in Town Center 2 and indicated that they would drill a deeper well on that property to access the additional capacity needed for the anticipated development there. In addition to the estimated \$150,000 to drill the well, they estimate an additional \$300,000 to build and equip the pump station. Aqua NJ received notice from NJDEP in March of 2010 extending its Aquifer Test Approval period to June 30, 2013. The Aquifer Test Approval will enable Aqua to test the Piney Point aquifer (located deeper than the current aquifer from which its water is drawn) and to access the water from that aquifer via new deeper wells, subject to approval by NJDEP of water quality. Should Piney Point not yield sufficient capacity, Aqua will consider a Preventive Risk Management approach to insuring water quality from the existing well at their site on Sherman Avenue.

The BTMUA Board of Commissioners authorized its engineer to evaluate this draft Utility Service Plan on November 10, 2010 to determine what, if any, infrastructure improvements, other than the extension of water lines, would be needed specifically to handle the projected water demand of Node C and Light Industrial Receiving Areas within its franchise area. Based on the Water Supply Map (Map 1A), the BTMUA currently has a 12 inch water main in Route 9 adjacent to Node C and a 12 inch water main that runs up Hickory Lane and an 8 inch water main that runs down Wheaton Avenue through the center of the existing industrial park in the Light Industrial Receiving Area. The developers of the Receiving Areas will be required to extend water service from these existing mains into their projects at their expense. Map 1A shows that the BTMUA currently has three wells that provide water that is treated at their Station Road Water Treatment Plant and stored in their 0.4 million gallon storage tank on the same property. As of the writing of the last revision to this Utility Services Plan, the BTMUA engineer had not advised that any new wells or additional storage tanks would be required to serve the projected demand from Node C and the Light Industrial Zone (1.55 mgm).

Generally, water infrastructure will need to be extended and upgraded to support the development anticipated as a result of the TDR program. Specific on-site and off-site improvements would be identified during the site plan review process and would be the responsibility of the redeveloper as specified in the redeveloper agreement in the case of Berkeley Town Center; and in developer agreements in the case of Town Center, Industrial (CAFRA) Node and Node C.



MAP 2 WATER SERVICE AREAS



WASTEWATER COLLECTION AND TREATMENT

Sanitary Sewer

Sanitary sewer service is provided by the Berkeley Township Sewerage Authority (BTSA). Most areas east of the railroad right-of-way are presently provided with sanitary sewer service, or have reasonable access to sanitary sewer infrastructure. The BTSA also provides wastewater collection service to the senior citizen communities of Holiday City and Silver Ridge Park West, in addition to Bayville and South Seaside Park. Those residents and businesses not served by the BTSA operate septic systems. The BTSA has the capacity to extend sanitary sewer service to developed lots currently served by septic systems (particularly in the Pinewald area), and has been identifying and locating streets and/or individual lots throughout the Eastern mainland that lack sanitary sewer service. Presently the BTSA wastewater collection system consists of approximately 260 miles of gravity sewer interceptors and force mains, and 14 pump stations. Existing sewer lines are in close proximity to all of the Receiving Areas – Route 9, Gladney Avenue, and Locker Street for Berkeley Town Center; Route 9, Korman Road, Cranmer Road, Frederick Drive, and Butler Avenue for Town Center 2; Hickory Lane for the Light Industrial Node; and Evernhan Avenue for Node C.

All of the Receiving Areas are located in the Ocean County Utility Authority (OCUA) Sewer Service Area and will continue to be located in the proposed NJDEP Sewer Service Areas as part of the new Ocean County Water Quality Management Plan (see Map 3). The OCUA operates a regional wastewater reclamation system serving a total of 36 municipalities in Ocean and Monmouth Counties, including Berkeley Township. The OCUA's Central Water Pollution Control Facility, is located to the north of the Pinewald neighborhood. This facility treats a combination of domestic, light industrial and commercial wastewaters, as well as septage generated from within the OCUA service area. The BTSA has a service agreement with OCUA under which OCUA is obligated to annually receive and treat all the wastewater flow from the BTSA.

The following capacity information for the Central Water Pollution Control Facility was supplied by the OCUA.

Table 12
Central Water Pollution Control Facility Capacity Estimate

Permitted capacity	32.000 mgd
Actual Flow - 4 th quarter 2007	24.716 mgd
Reserved for approved projects	1.877 mgd
Total committed flow	26.593 mgd
Remaining capacity	5.407 mgd



The proposed Berkeley Town Center development is estimated to include approximately 500,000 square feet of retail and restaurant uses, 50,000 square feet of general office use and 700 residential dwellings in the total buildout of Phase 1 and Phase 2. Of this, the first phase of development anticipated on the northern portion of the Berkeley Town Center is scheduled to occur within 5-10 years and is proposed to include 450,000 square feet of retail and restaurant uses, 50,000 square feet of general office use and 70 residential units. Based on a conservative assumption that potable water consumption equals wastewater treatment, it is anticipated that at full build-out, the wastewater demand generated by both phases of the proposed development of the Berkeley Town Center would amount to 57 MGY(4.75 MGM / 0.153 MGD). Based on a surplus capacity of 5.407 mgd (167.617 MGM / 2011.404 mgd) at the Central Water Pollution Control Facility, there appears to be sufficient capacity for the Town Center project. It should also be noted here that the design standards and zoning requirements for the Town Center 2 and Node C will prohibit the use of potable water for irrigation purposes consistent with sustainable development and Green Building standards. Any water used for irrigation will be required to use only nonpotable sources of water (captured rainwater, recycled graywater, etc).

Likewise, the Town Center 2 projected water consumption of 13.43 mgd (1.119 MGM / 36,113 GPD), if directly translated into wastewater flow, would be easily absorbed within the 5.407 MGD (167.617 MGM / 2011.404 mgd) surplus capacity of the Central Water Pollution Control Facility. Existing sewer lines already serve the Berkeley Plaza (Shop Rite) shopping center and the highest density residential development in Berkeley Township already exists along Frederick Drive and elsewhere within the Town Center, so the additional development as part of this Receiving Area will be infill (consistent with LEED-ND prerequisites for sustainable neighborhood development).

For Node C, the proposed Receiving Area development demand of 50.785 mgd (4.232 MGM / 136,520 GPD), based on water demand, again is easily accommodated within the 5.407 MGD (167.617 MGM / 2011.404 mgd) surplus capacity of the Central Water Pollution Control Facility at the OCUA. Sewer lines currently exist along Route 9 along the easterly edge of Node C and immediately to the west of the Barnegat Branch Trail right of way along the westerly edge of Node C. The existing Cedar Creek Campground, which is part of Node C, is already connected from Harbor Inn Road. In addition, it should be noted that the baseline zoning for Node C unconstrained vacant land would generate a buildout of 616 single family homes in the R400 and Conservation Residential zones and 147,000 square feet of commercial space in the Rural Highway Business Zone. Applying the single family water consumption multiplier to the 114 single family residential units and the commercial multiplier to the commercial floor space generated under the baseline buildout generates a baseline water/wastewater demand of 96,865 gpd. Therefore the differential attributed to the transfer of TDR credits is 39,655 gpd (136,520 gpd – 96,865 = 39,655).

The proposed Light Industrial Node will be infill of an existing industrial park which is currently developed to the maximum 30% lot coverage allowed by CAFRA regulations.

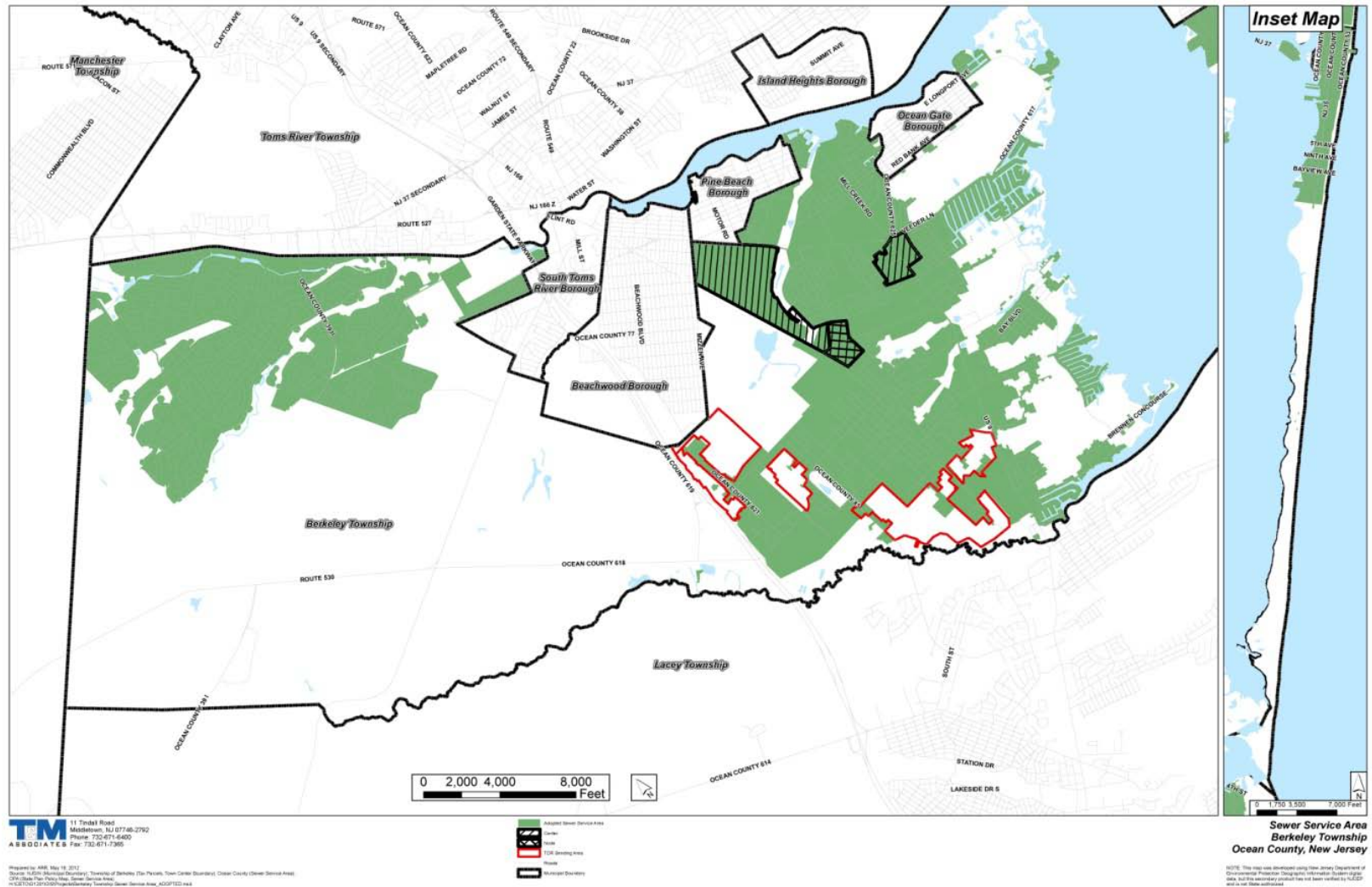


The existing industrial buildings, including the Henriques Boat Works operated by the owner of the industrial park, are served by existing BTSA sewer lines which can be extended down road rights of way once the Node becomes recognized by Rule amendment by NJDEP. The additional 7.254 mgy (604,500GPM / 19,500GPD) added to the demand on the OCUA Central Water Pollution Control Facility is easily absorbed within the 5.407 MGD (167.617 MGM / 2011.404 mgy) current existing surplus capacity.

As with water infrastructure, wastewater infrastructure will need to be extended and upgraded to support the development anticipated as a result of the TDR program, although less so in the TC2 and Light Industrial Node which are infill areas where sewer lines do not need to be extended as far. Specific on-site and off -site improvements would be identified during the site plan review process and would be the responsibility of the redeveloper as specified in the redeveloper agreement in the case of Berkeley Town Center; and in developer agreements in the case of Town Center and Node C.



MAP 3: Sewer Service Area per Draft Ocean County WQMP



STORMWATER MANAGEMENT

Berkeley adopted a Municipal Stormwater Management Plan (MSWMP) and associated ordinances in 2005 and 2006. The MSWMP outlines specific stormwater design and performance standards for new development. Additionally, the plan proposes stormwater management controls to address impacts from existing development. Preventative and corrective maintenance strategies are included in the plan to ensure long-term effectiveness of stormwater management facilities. The plan also outlines safety standards for stormwater infrastructure to be implemented to protect public safety. All future development in Berkeley Township must utilize the best available technology to minimize off-site stormwater runoff, increase on-site infiltration, simulate natural drainage systems and minimize off-site discharge of pollutants to ground- or surface water and encourage natural filtration functions.

Non-structural stormwater management measures are to be considered first and shall include site design and preventive source controls. To confirm the effectiveness of such measures, development proposals must verify the control of stormwater quantity impacts as detailed in the Stormwater Management rules.

The general standards for structural measures shall be incorporated as needed to meet the soil erosion, infiltration and runoff quantity standards included in the Township's Stormwater Ordinance. The design standards for the specific structural stormwater management measures are those included in the New Jersey Stormwater Best Management Practices Manual. Other designs or practices may be used if they are approved by the Ocean County Soil Conservation District. The design and construction of such facilities must comply with the Soil Erosion and Sediment Control Standards as well as any other applicable state regulation, including the Freshwater Wetland Protection Act rules, the Flood Hazard Control rules, the Surface Water Quality Standards, the Coastal Area Facilities Review Act, Waterfront Development and Harbor Facilities Act, and the Dam Safety rules.

Stormwater runoff quality controls for total suspended solids and nutrient loads shall meet the design and performance standards as specified in the Stormwater Management rules. The minimum design and performance standards for infiltration and groundwater recharge specified in the Stormwater Management Rules must be met for all applicable development.

Currently, Berkeley requires all basins for major subdivisions to be owned and maintained by a private Homeowners Association. Basins for non-residential development are to be owned and maintained by the property owner or other official designated at the time of application to the applicable Board. It is not anticipated that the buildout of the Receiving Areas will require any expansion or extension of any off-tract public stormwater infrastructure. In addition, developers and redevelopers will be encouraged to utilize green roofs, rain cisterns/barrels, rain gardens and bio-retention



basins to minimize the generation of stormwater runoff consistent with Green Building standards such as LEED-NC (New Construction & Major Renovations) Sustainable Sites Credits 6.1 (Stormwater Quantity) and 6.2 (Stormwater Quality). These more sustainable design practices are particularly important in light of the impacts of nutrient levels in the Barnegat Bay that have degraded water quality and caused decline of eelgrass beds that are critical to the sensitive estuary ecosystem. This reinforces the overall benefit of TDR in preventing the disturbance of remaining forested areas of Pinewald while addressing brownfield and greyfield conditions through redevelopment in the Receiving Areas.

Stormwater management for the new development within the Receiving Areas will be addressed through site plan approval. Draft zoning regulations and design standards for the Town Center 2 and Node C Overlay Districts also apply Best Management Practices for the use of multiple rain gardens or bioretention basins to maximize groundwater recharge rather than channeling stormwater to streams (see Appendix of TDR Element). These more sustainable design practices are particularly important in light of the impacts of nutrient levels in the Barnegat Bay that have degraded water quality and caused decline of eelgrass beds that are critical to the sensitive estuary ecosystem.

TRANSPORTATION

Roadways

The Receiving Areas are strategically placed along the Route 9 corridor, which will serve as the main artery for each zone. In order to lessen the impact on the overall circulation system, development in each zone will be required to be consistent with Berkeley's 2008 circulation element (see Maps 4 and 5) and incorporate elements such as shared parking and access points, internal grids, linkages to adjoining uses and neighborhoods, pedestrian and bicycle facilities, and transit-friendly design. Where possible, the street network of the proposed Receiving Areas will connect to or align with the rights-of-way of abutting street grids.

For the most part, internal roadways and sidewalks as well as NJDOT required improvements within the Route 9 right-of-way would have to be provided by prospective developers/redevelopers, as would be the case with any site development. Expansion of the public roadway system within the Receiving Areas would be assessed against the developer.

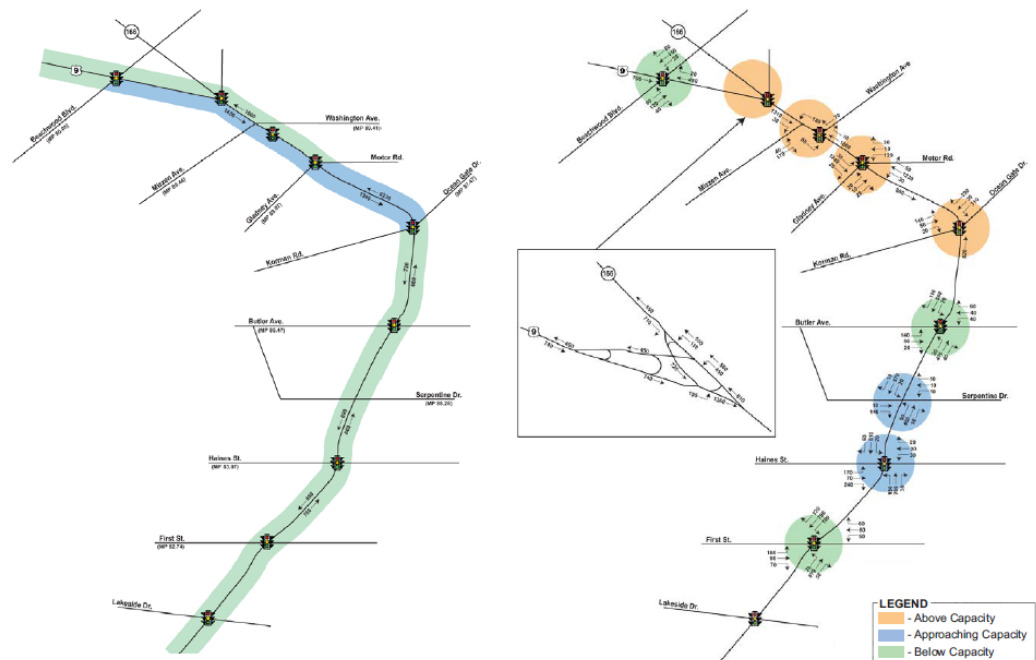
In 2004/2005, Berkeley Township participated in the NJDOT Route 9 Corridor Study. The Route 9 Corridor Master Plan proposed certain capital improvements along Route 9 in Berkeley. Berkeley's 2008 circulation plan supports the following proposals that would improve traffic flow in the vicinity of Berkeley Town Center and Town Center 2:



- Re-align Washington Avenue and extend to Capstan Avenue; Extend Mizzen Avenue to Washington Avenue. (Impacts Berkeley Town Center)
- Construct a roundabout at the intersection of Route 9 and Ocean Gate Drive, Veeder Lane and Korman Road as seen in the following illustration from the Route 9 Corridor Master Plan. (Impacts Towns Center 2).

The graphic below taken from the Route 9 Corridor Master Plan shows the segment of Route 9 running through Berkeley Township and the northern portion of Lacey Township (Lanoka Harbor) and illustrates the existing functional capacity of the major road segments and intersections, including turning movements. The excerpt from Section 4.0 of the Route 9 Corridor Master Plan, also shown on the following page, illustrates two of three alternative treatments for the intersection of Route 9 and Korman Road/Ocean Gate Drive, both of which recommend a version of a modern roundabout, as is shown in the Concept Plan for the Town Center 2 Receiving Area.

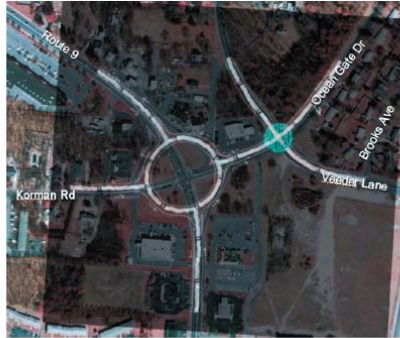
North Corridor
2004 Weekday PM Peak Hour
Mainline and Intersection Level of Service



4.0 Corridor Master Plan

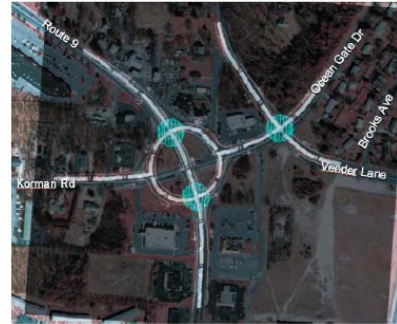
- **Option B: Replacing signal with a modern roundabout.**

This option replaces the current intersection configuration with a modern roundabout (please refer to Route 9/Green Street Option C for modern roundabout discussion). With the difficult configuration of Route 9's bend through the Korman Drive/Ocean Gate intersection, a roundabout's size and geometry is appropriate. Also, as the area around this intersection redevelops from suburban to more urban uses, the roundabout will become more effective as it can typically accommodate high volume streets with slow traffic better than traffic signals.



- **Option C: Replacing signal with a split roundabout.**

Option C replaces the existing intersection configuration with a modified roundabout configuration with Route 9 running through the middle of the roundabout (please refer to Route 9/NJ 166 for split roundabout discussion). Depending on more detailed traffic analysis, the split roundabout may be more efficient than the regular roundabout in accommodating the high volume of through traffic along Route 9.



The extension of Western Boulevard by Ocean County from its current terminus at Northern Boulevard northward to Route 9 has been included in the Berkeley Master Plan since at least 1997 and is carried forward in the 2008 circulation plan. Two alternatives are illustrated on Map 4. Alternative #1 is the alignment that the County has been considering to date. Alternative #2 is a possible alignment proposed by the circulation plan that works in tandem with the Barnegat Branch Trail. The Western Boulevard project is presently undergoing various assessments by the County and a final determination on the exact route has yet to be made. The North Jersey Transportation Planning Authority (NJTPA) amended its Transportation Improvement Plan (TIP) on May 10, 2010 to include 3.2 million dollars of Federal SAFETEA-LU funds for the alternative route assessment, feasibility study and design for Western Boulevard Extension.

Whatever the final route, an extended Western Boulevard will likely traverse the 700+ acre former sand and gravel pit owned by NJ Pulverizing and reach Route 9 through the Berkeley Town Center. The road should therefore be sensitively designed as a limited access rural parkway between its current terminus at Northern Boulevard and its extension through the sand pit and Town Center to Route 9 so as not to induce any unintended and unwelcome development near environmentally sensitive areas. The road should also accommodate pedestrians and bicycles as part of the Township's trail system.

Transit

The primary mass transit opportunity in Berkeley is provided by NJ Transit Bus Route #559 which runs along Route 9 between Atlantic City and Lakewood. The nearest park and ride facility is in Toms River, approximately 3.5 miles from the center of Berkeley, where connections can be made to busses serving Newark and New York.



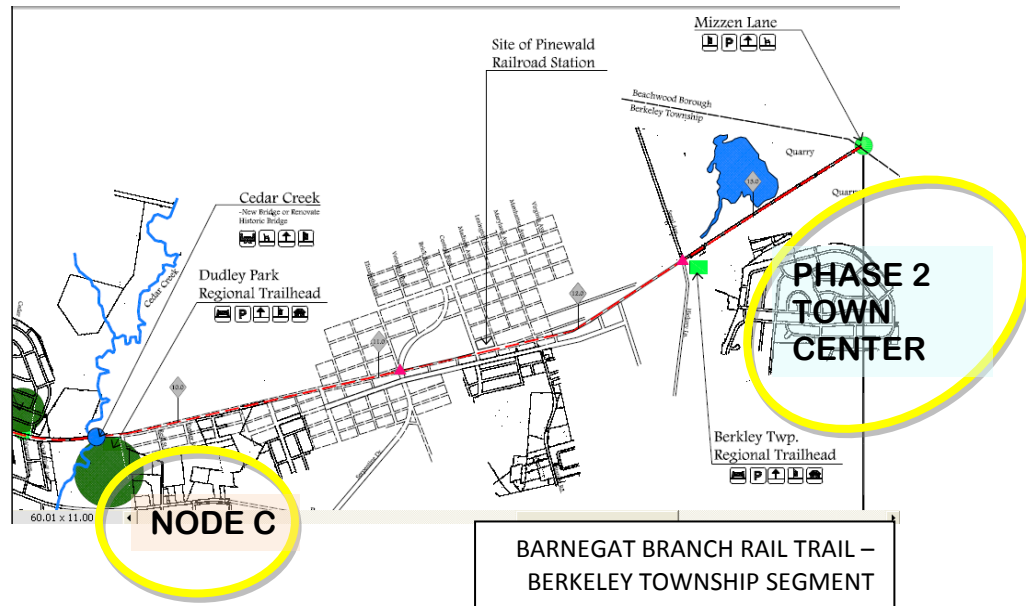
In a memorandum from NJ Transit to the Office of Smart Growth related to the SPC plan endorsement process, NJ Transit states that *“Given Berkeley’s optimal access to NJ Transit services through the nearby Toms River Park-Ride, and that most residential pockets are either senior citizen developments with their own transportation services or are areas that are served by Ocean County-operated paratransit, it appears existing development and future growth will be adequately served by existing transit systems. Therefore, NJ Transit does not foresee expanding service to Berkeley Township. If more localized service is desired, the municipality should work with Ocean Ride to add service.”* Ocean Ride is a fixed-route service operated by the County of Ocean for the handicapped and elderly. Ocean Ride currently provides two bus routes that serve the eastern and western portion of the Township. The eastern route (OC7) operates Monday, Wednesday, and Friday and stops at the Bay Ridge Apartment complex off Route 9 (Town Center 2), the Berkeley Shopping Center on Route 9, Baywick Plaza on Route 9, and Ocean Gate Drive and Point Pleasant Avenue.. The western route (OC8) operates daily and makes several stops within the Holiday City and Silver Ridge adult/senior communities of Berkeley. While no discussions have taken place with the County regarding expanding the OC7 Route to serve the Berkeley Town Center once it becomes developed, it is anticipated that the Center will become a popular destination for regular Ocean Ride patrons.

Given that it is unlikely that additional NJ Transit bus service will be provided in Berkeley, it is important to ensure that access to the existing service is enhanced whenever possible. To that end, the Land Use and Circulation Plan Element of the Township’s Master Plan recommends concentrating growth in centers and nodes with transit-friendly design features that accommodate bus and shuttle service such as shelters, street furniture, and pull-off lanes within reasonable proximity to major uses and destinations. Bus stops will also be connected to the bike and pedestrian trail system being promoted in the Master Plan and land development regulations will incorporate bicycle storage facilities based on LEED rating systems. In addition, park and ride opportunities should be provided whenever feasible in the centers and nodes utilizing surplus retail parking during the off-peak daytime hours.

Bicycle and Pedestrian

Ocean County is developing a rail to trail project along the former Barnegat Branch railroad right-of-way, which forms the western boundaries of the Berkeley Town Center and Node C. This trail has the potential to serve as an important pedestrian and bicycle link between the northernmost and southernmost Receiving Areas. There is also some potential to link all four Receiving Areas to a larger proposed trail system.





All development in the Receiving Areas will be required to provide an efficient and attractive pedestrian circulation system that includes sidewalks and other suitable pedestrian infrastructure, linked where possible to transit bus routes, consistent with LEED-ND standards.

Traffic improvements for the new development within the Receiving Areas will be addressed through site plan approval. Draft zoning regulations and design standards for the Town Center 2 and Node C Overlay Districts also apply Best Management Practices for the use of bicycle storage facilities, pedestrian crossings and pathways and bus stops/shelters (see Appendix of TDR Element).

Cost Sharing Formula

As most of the anticipated capital improvements associated with the buildout of the four Receiving Areas are roadway related with associated pedestrian walkways, the most conventional method of sharing these costs with regard to distributing them among future developers would be based upon the number of trips to be generated by each development as a percentage of the total number of trips accommodated by the improvement. For Phase 2 of the Berkeley Town Center, the principal improvement is the construction of Western Boulevard Extension at an cost estimated by the County Engineer to be 6 million dollars. This future County road is expected to be funded by a combination of Federal and County sources, but the last segment of the road, approximately 2,000 feet of around 2 miles of new road, would be constructed by the redeveloper of Phase 1 of the Berkeley Town Center. Actual contributions by future developers of Phase 2 are therefore difficult to determine at this time, but it is likely that contributions will be negotiated in future redevelopment agreements based upon the



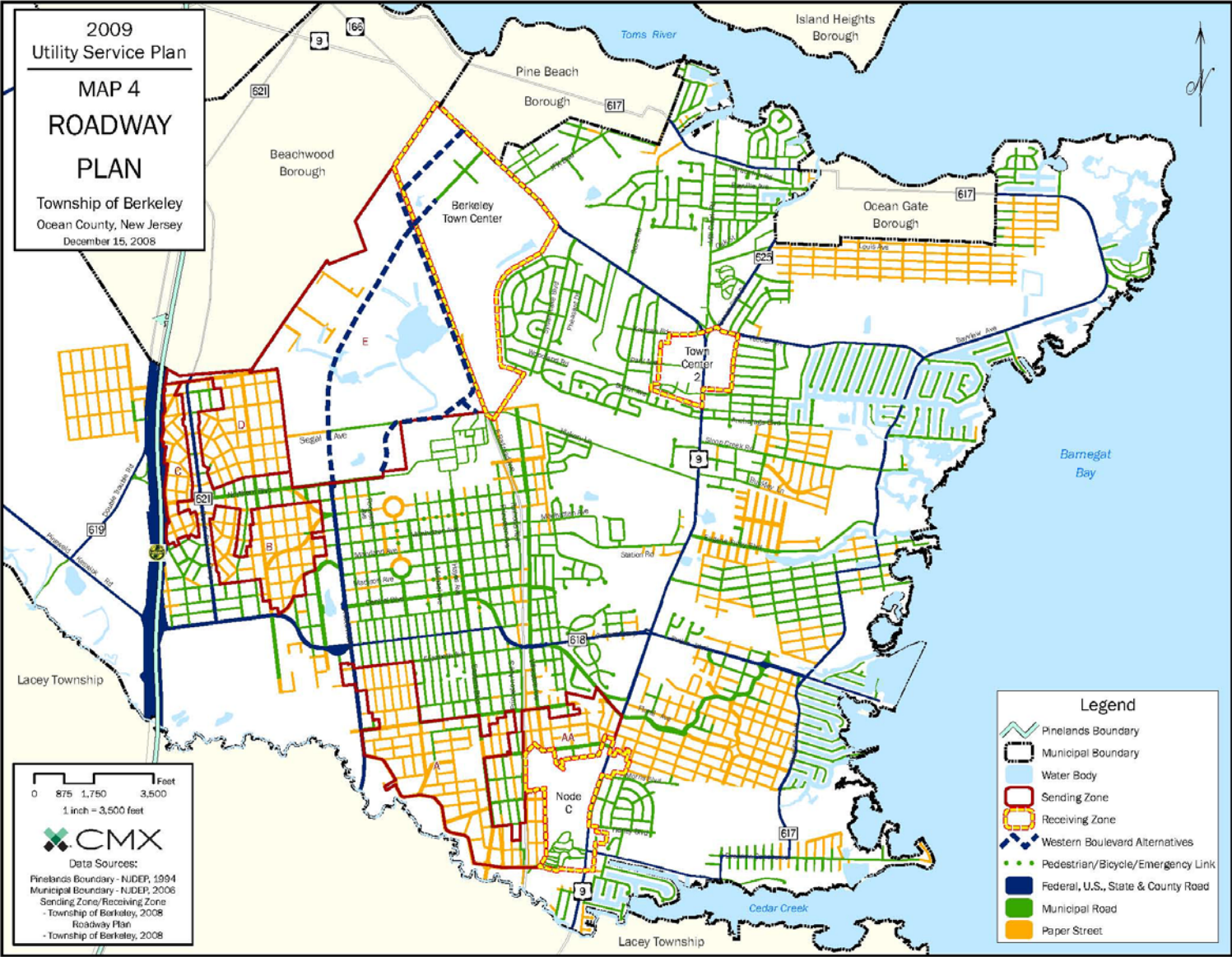
proportional number of trips generated by each project that will use the new road. Likewise, contributions to the cost of the final mile of the Barnegat Branch Trail may be negotiated with future developers of Phase 2.

However, for Town Center 2 and the Light Industrial Node, the capital improvements are expected to be made by the owners of the Berkeley Plaza (Shop Rite) shopping center and the industrial park on Hickory Lane, respectively. To the extent that other subsequent developments will benefit from the listed capital improvements, it is expected that recapture agreements will be used. Recapture agreements are agreements made with an original developer and a government entity which allows the original developer to charge a "connection fee" to a new developer who connects to their improvement. This method has been used successfully for water or sanitary sewer. The developer pays for the entire improvement and hopes to recapture the cost as other developers connect to the improvement.

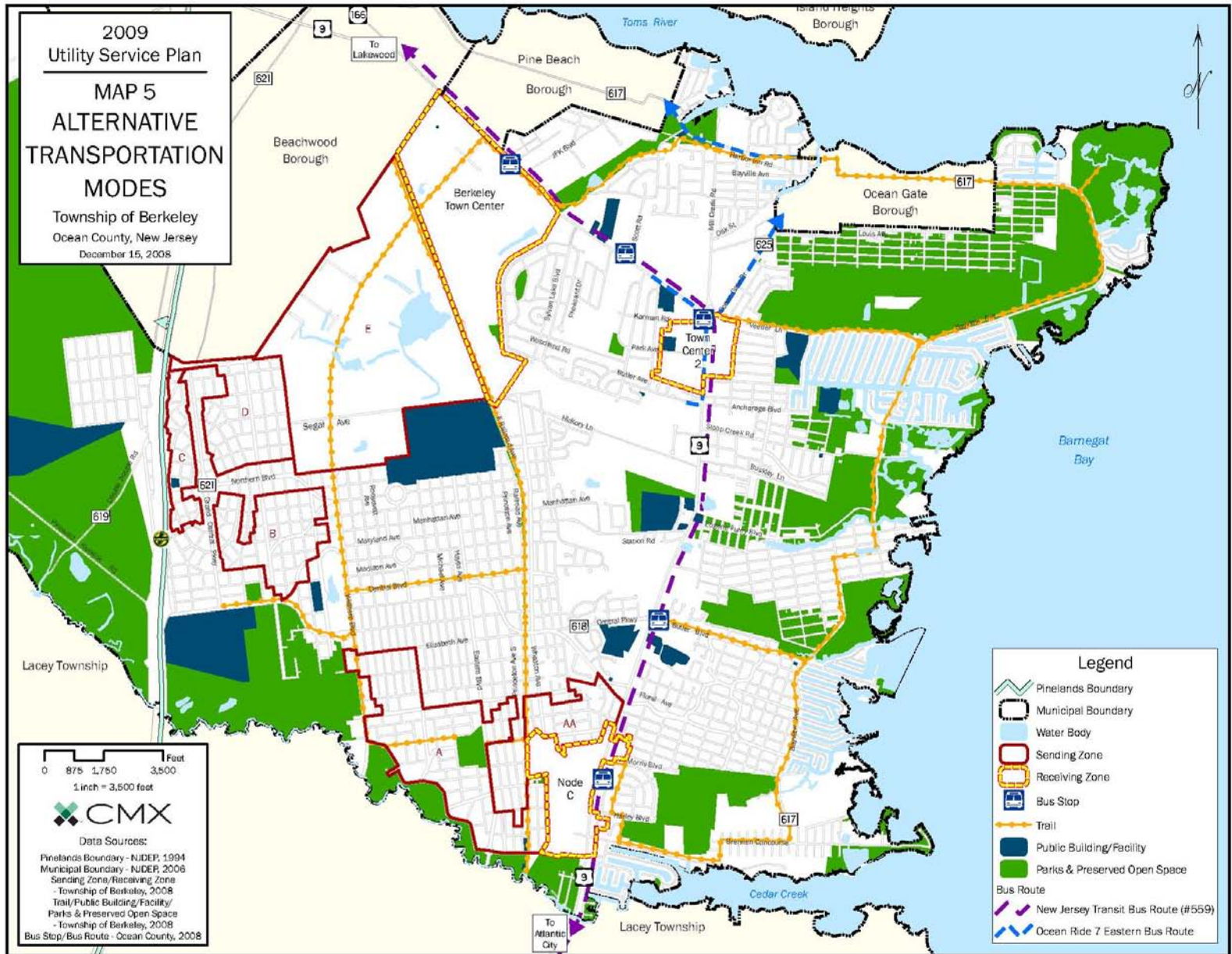
The cost of the two traffic signals anticipated for Node C are expected to be borne by the developers incrementally through the payment of an escrow fee to the Township designated for each project. Phases of development would be linked to the trip generation that would trigger the need for the signalization and payments made by developers of smaller projects would be applied to the overall cost of the two signals. If Node C is to be developed by a single developer, the traffic signal improvements would be required as part of the upfront site improvements and the escrow would not be necessary.



MAP 4 ROADWAY PLAN



MAP 5 ALTERNATIVE TRANSPORTATION MODES



PUBLIC FACILITIES

Overview of Existing Facilities

Administrative

The Berkeley Township municipal complex is located in the Pinelands on either side of Pinewald-Keswick Road and contains municipal offices including finance, business administrator, clerk, registrar, tax assessor, police department, construction, and public works (see Map 6).

Library

The Berkeley Branch of the Ocean County Library System is located on Station Road near Route 9. The Library maintains a 45,000-volume library of books, encyclopedias and other reference materials, and subscriptions to over 100 magazines and newspapers. There are more than 1,400 feature films on video and DVD, a large and varied collection of compact discs, and hundreds of books in large print, and on cassette and compact disc. Eight Internet and two word processing computers are available for use by the public.

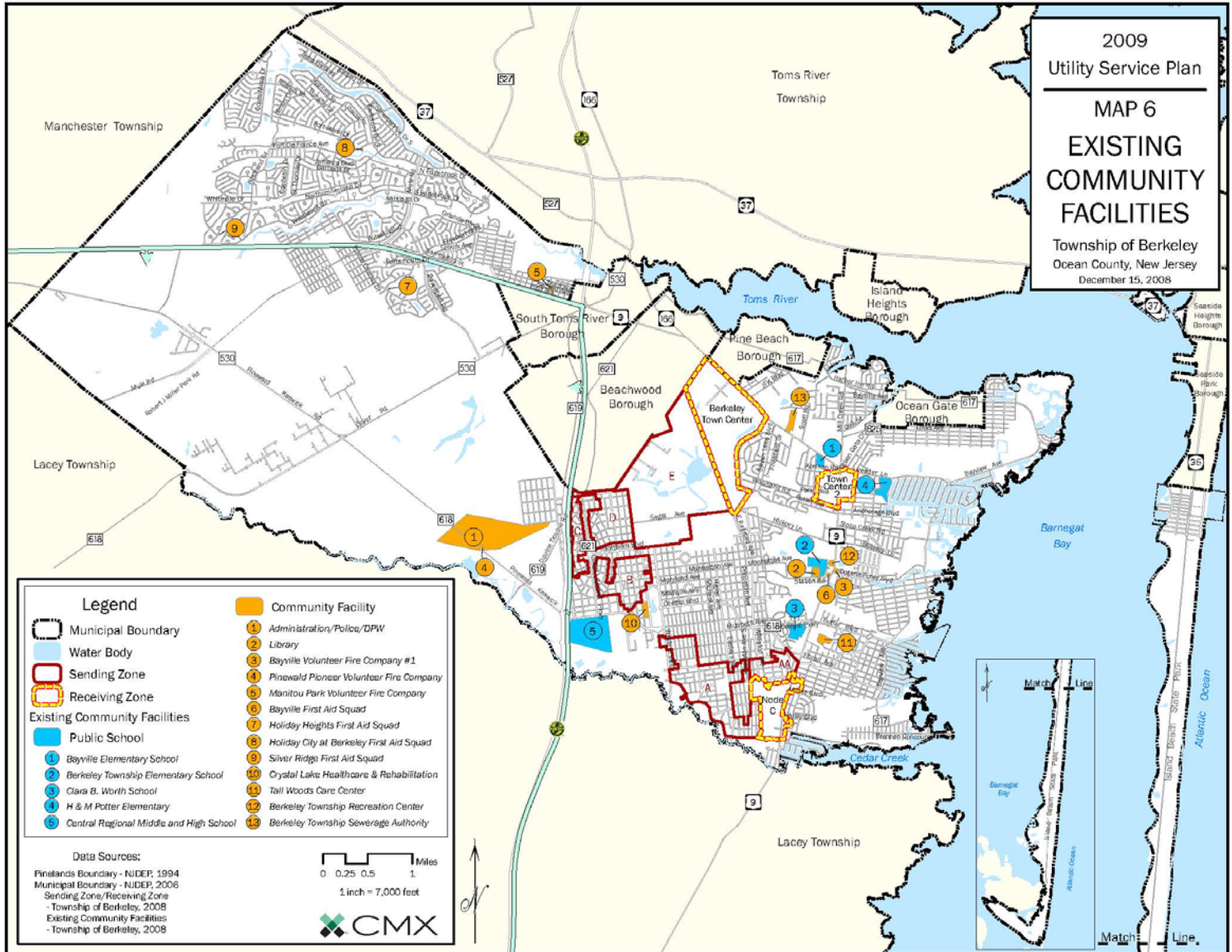
The Ocean County Library Long Range Facilities Plan includes plans to expand the Berkeley branch by 8,700 square feet (an approximately 54% increase) by 2012 to accommodate the needs of Berkeley's expanding population.

Schools

The Berkeley Township School District is a Type II school district that is contiguous with the borders of the Township. The school district includes four elementary schools: Bayville, Clara B. Worth, H&M Potter, and Berkeley Township. The Central Regional High School District was established in 1955 in Berkeley Township, and is a Type II district which includes the municipalities of Berkeley, Island Heights, Ocean Gate, Seaside Heights and Seaside Park. The regional district operates a middle school and a high school.



MAP 6 COMMUNITY FACILITIES



Public Safety

The Police Department, which is located at the municipal complex, had 76 Officers at the time of this report. The Department includes a Boat Division, ATV Division, Marine Division with Coast Guard and State Marine Police Certification, and a Regional SWAT.

The Fire Department consists of three volunteer fire companies with approximately 150 volunteer firemen. Fire Company #1, the Bayville Volunteer Fire Company, covers the eastern portion of the Township. Fire Company #2, the Pinewald Pioneer Volunteer Fire Company, covers the western portion of the Township. Fire Company #3, the Manitou Park Volunteer Fire Company, covers the northern portion of the Township including Holiday City.

Presently, there are four Volunteer First Aid squads operating within the Township. They are the Bayville First Aid Squad, the Silver Ridge Park First Aid Squad, Holiday Heights First Aid Squad and the Holiday City at Berkeley First Aid Squad. All Berkeley Township First Aid Squads are run on a volunteer basis, raising money through fund drives and donations.

Recreation

The Township's recreation system covers approximately 680 acres (see Map 7). The Township's 15 developed parks and recreation facilities account for just under 500 acres. The Township also maintains approximately 190 acres of undeveloped recreation areas. The Berkeley Recreation Center is located at the intersection of Route 9 and Eugene Furey Boulevard, and provides meeting space for residents to use for community events.

Ocean County maintains three recreation areas in Berkeley – Berkeley Island County Park (25 acres), Robert J. Miller Airport Park (35 acres), and Mill Creek County Park (14 acres). The following properties were acquired for open space under the Ocean County and/or State Natural Lands Trust Fund Program:

- Good Luck Point and Good Luck Point Extension: a 363 acre area near Veeder, Bayview, Allen, and Sloop Creek Roads, with an extension of 175 acres.
- Roberts Avenue Marsh: a 7.1 acre marshland near Roberts and Bay View Avenues.
- Toms River Divide: a 126.5 acre area near the Garden State Parkway and Magnolia Avenue.
- Lifetime Homes: 126.1 acres acquired in 2000 through "Save Barnegat Bay," located near Veeder Lane.
- Berkeley Island West: 17 acres near the Brennan Concourse.
- KGE: 100 acres of land located near Pinewald – Keswick Road.
- Barnegat Branch Rail Trail: Stretching through Barnegat, Berkeley and Ocean Townships, this trail occupies 52 acres of rail ROW, acquired through "Rails to Trails" program.



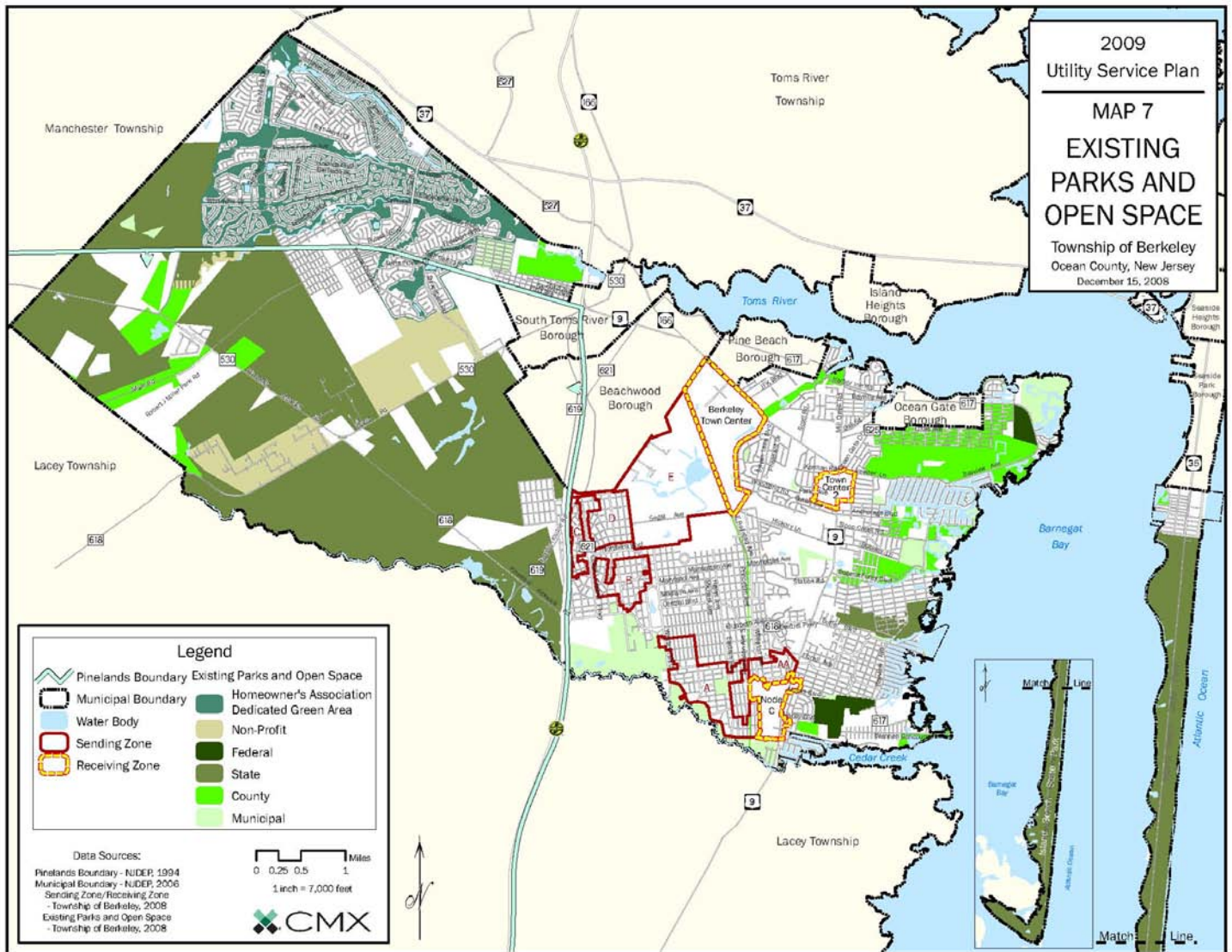
- Sloop Creek Donation: 5.7 acres of land encumbered by wetlands, directly adjacent to Lifetime Homes property.
- Potter's Creek: Large area along Potter's Creek totaling 118 acres acquired in 2006.
- Haines: 400 acres along Route 530 acquired in 2007.
- NJ Natural Land Trust parcel – 200 acres.

The NJ Department of Environmental Protection maintains two parks and one preserve in Berkeley. Island Beach State Park totals over 3,000 acres on the barrier island separating the Atlantic Ocean from the Barnegat Bay. Double Trouble State Park totals 7,881 acres, of high quality Pinelands watershed. The Crossley Preserve consists of 1,200 acres of pinelands habitats, oak uplands, and Atlantic white cedar swamps and bogs and provides prime habitat for several threatened and endangered plants and animals. The Greenwood Forest Wildlife Management Area (WMA) is located adjacent to the Manchester- Berkeley boundary in the Pinelands.

There are two large open space parcels located in the Pinelands that are owned by non-profit organizations. The Hovnanian Wildlife Sanctuary is a 465 acre preserve owned by the NJ Audubon Society. The Nature Conservancy owns a 361 acre parcel in the vicinity of the County Airport.



MAP 7 PARKS AND OPEN SPACE



Need for Additional Public Facilities

Generally, the Township is adequately serviced with public facilities especially parks and open space, which the Township continues to expand. Certain facilities may however need to be expanded based on the anticipated development in the Receiving Areas. For instance, the largest of the Receiving Areas, Berkeley Town Center, may present enough additional development to generate the need for additional police, fire, or other municipal services. Currently the entire township is service by the police headquarters on Pinewald-Keswick Road, which is on the other side of the Garden State Parkway with no direct road linkage to the northern Bayville section of Route 9. In addition, the Bayville EMS Station is at the corner of Station Road and Route 9, which is several miles and six traffic signals away from the Town Center site. Therefore, until the Western Boulevard Extension provides that needed link for emergency vehicles, the Township may need to consider the possibility of the incorporation of a substation in the Town Center. These uses, if deemed necessary, will be integrated into the overall development plan of the Berkeley Town Center and will be constructed by the eventual redeveloper(s) of the Town Center.

In addition to municipal services, the major impact on new development is usually on the public school system. However, the transfer of development, that would have been nearly 400 single family homes on lots ranging from 15,000 square feet to 3 acres in Pinewald, to mixed-use centers and nodes with higher density housing types and additional complementary commercial uses in three Receiving Areas and an expanded industrial park in the other will significantly reduce the generation of school age children that would create a need to expand school facilities. To illustrate this point, the table below uses statewide multipliers developed by the Center for Urban Policy Research (CUPR) at Rutgers University to compare the build-out impacts in terms of the estimated generation of school-aged children between the equivalent of 391 single family homes in the portion of the Sending Areas currently zoned for residential use without TDR plus the 114 single family homes currently permitted in Node C, to the estimated 872 additional dwelling units potentially developed in their place through TDR at higher density unit types in the Receiving Areas.³ The table shows a net reduction of 147 school-aged children due to TDR.

Table 13
Net Change in School-Age Children

Unit Type	Total Number of Units	Multiplier for Public School Children	Public School Children From within Sending Areas	Public School Children From Transferred Development	Difference in School-age Children
Single Family Detached (4-5 BR) from Sending Areas	391	0.861	337		
Single Family Detached (4-5 BR) from Node C	114	0.861	98		
Total	505		435		
Townhome (3 BR)	622	0.381		236	
Multifamily (5+ Units, 2BR)	250	0.206		52	
Total	872			288	-147

³ Transfer of Development Rights Real Estate Market Analysis – First Draft, Urban Partners, August 20, 2010, page 10.



In addition, it has become the belief of demographic and market analysts that the movement of the “Baby Boomers” into retirement (the oldest Boomers are reaching age 65 in 2011) and the next significant “bulge” in the demographic age groups (the “Millennials” – born between 1982 and 2002 and estimated to be even greater in numbers than the “Boomers”⁴) is reaching child-bearing age. However this latest group of young adults is expected to pursue more socially conscious, meaningful but lower income employment than their parents. That demographic profile generally will desire a more affordable urban, social-cultural lifestyle with a greater percentage opting out of or delaying parenthood for either social or economic reasons, thereby causing smaller household sizes. This means fewer families with children living in suburban “sprawl” environments in the future, and potentially a gradual decline in student enrollment as the current student population passes through high school with fewer students coming into the system to replace them. In Berkeley’s case, the massive construction of retirement communities in the 1970s and 1980s created a population with an average age in the “active adult” range to start with, so the shift in buildout to a higher density, more affordable housing type, combined with the projected increase in young childless households, suggests that enrollment will actually decline and classroom sizes will shrink even with the increase in population and employment that occurs in the Receiving Areas.

Some indication that this trend is already well underway is found in the difference between the enrollment projections in the Long Range Facilities Plan (2005 to 2010) of the Berkeley Township and Central Regional School Districts, versus the actual enrollment reported by the New Jersey Department of Education Report Cards. The following table provides the numbers.

Table 14
Berkeley Township School Enrollment – Projections versus Actual

Facility	Constr. Date	Grades	Student Capacity	LRFP Proj. Enroll.	Oct 06 Actual Student Enrollment	Oct 08 Actual Student Enrollment	Oct 09 Actual Student Enrollment	Net Change 2005-2009	Net Change 2008-2009	Deviation from LRFP
Bayville Elementary	1926	K-4	421	449	444	461	433	-11	-28	-16
Clara B. Worth Elementary	1962	K-4	723	520	474	489	556	+82	+67	+36
H&M Potter Elementary	1973	K-4	736	479	428	474	449	+21	-25	-30
Berkeley Twp. Elementary	2005	5 & 6	650	592	557	535	529	-28	-6	-63
Middle School	1981	7-8	721	732	731	678	673	-58	-5	-59
High School	1956	9-12	1568	1649	1480	1394	1372	-108	-22	-277

⁴ “Is Your Firm Ready for the Millennials?” Published: March 08, 2006 in Knowledge@Emory (<http://knowledge.emory.edu/article.cfm?articleid=950>)



The trends indicated in the table above support the anticipated trend towards declining school enrollment, as only one of the four elementary schools (Clara B. Worth) experienced an increase in enrollment and experienced enrollment that exceeded the projection of the Long Range Facilities Plan, although that school also has the greatest surplus capacity. The other elementary schools experienced enrollment declines and current enrollment which is less than projected in the LRFP. The Central Regional Middle School and Central Regional High School experienced dramatic declines in enrollment, including significant deviations between actual and projected enrollment in the Long Range Facilities Plan. When the excess capacity and flat to declining enrollment in Grades 5 and 6 in the Berkeley Township Elementary School are considered, these declines in Grades 7 through 12 can be expected to continue. Therefore, it can be reasonably concluded that school children generated by the growth projected in the Receiving Areas can be absorbed, and may actually be needed by both School Districts to maintain efficient utilization of existing facilities.

With regard to the need for open space and recreation facilities generated as a result of the buildout of the Receiving Areas, each of the Receiving Areas will be required to provide some degree of open space and recreation amenities. Detailed recreation and open space plans for each new development will be reviewed by the Planning Board during the site plan review process. The primary location of parks and recreation facilities in Berkeley Town Center will be along the entire western portion of the Center complementing the County's Barnegat Branch Trail, and abutting the creek along the southern boundary of the center. Recreation space in Town Center 2 will be comprised primarily of public plazas and pedestrian amenities. Node C has the potential to host a trailhead and visitors center for the Barnegat Branch Trail at or near Dudley Park. This site is well-suited to serve as a local and regional trailhead with parking, informational kiosks, bathrooms, directional and historical signage and possibly an interpretive center. This could be accomplished as a partnership between Ocean County and the developer(s) of the node.

Finally, with regard to balancing new Center-based development and redevelopment with environmental conservation and preservation of open space, it should be noted that the TDR Program of which this Utility Service Plan is a part, if successful, will preserve over 800 acres of existing forested lands in Pinewald which otherwise would have been subject to a continued pattern of gradual encroachment of single family development through the piecemeal extension of roads along paper street rights of way. These areas will remain undisturbed and generally under the jurisdiction of the Township and available as open space and habitat.



II. CAPITAL IMPROVEMENT PROGRAM

The following chapter constitutes the required capital improvement program (CIP) for the Receiving Areas identified in the development transfer plan. The CIP will be used to prioritize necessary infrastructure improvements identified in the utility service plan for the Receiving Areas as well as estimate costs, establish a timeframe for the improvements, and identify potential funding sources including public-private cost sharing.

INFRASTRUCTURE PRIORITIES

Based on the assessment of utilities and infrastructure needed to support future growth in the Receiving Areas, this CIP identifies the following potential infrastructure priorities:

1. Route 9 Improvements

It is anticipated that the predominant capital improvements required as a result of the buildout of the four Receiving Areas will be related to Route 9 and several intersecting streets. These improvements will range from relocating or adding traffic signals to limited widening for left turn lanes or acceleration/deceleration lanes at major entrances to new development and significant pedestrian improvements such as sidewalks and crossings.

- a. Berkeley Town Center

Traffic circulation improvements for the Berkeley Town Center will be associated by Phase and include related on-site and off-tract improvements as follows:

Phase 1 On-Site

- i. Berkeley Avenue Extension

As part of the redevelopment of Phase 1 of the Town Center, Rec Centers, Inc., the designated redeveloper, will be demolishing an existing vacant warehouse and former Carvel retail store and constructing a new public road through the Town Center Redevelopment Area that will extend Berkeley Avenue from its current terminus at Railroad Avenue through the site to a new intersection with Washington Avenue at Route 9 (see image below). This new road will enable traffic moving from Forest Hills Parkway in Berkeley Township down Grand Central Parkway into Beachwood on Berkeley Avenue to proceed



straight through to Route 9 and eliminate the current dog leg curve to Mizzen through a residential neighborhood.



ii. Signal Relocation – Mizzen to Washington Avenue

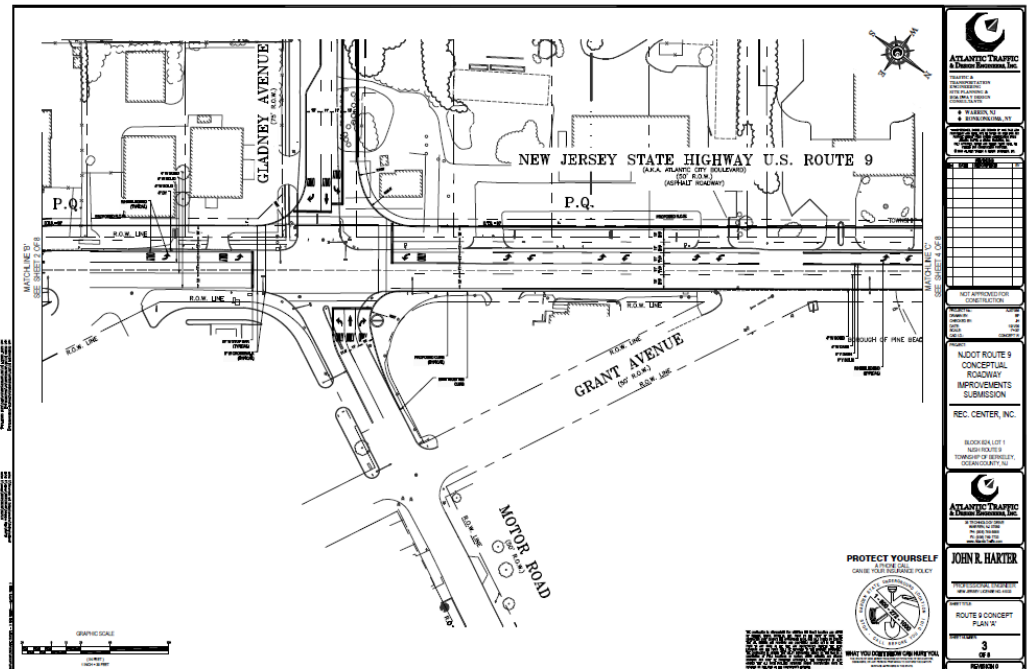
In conjunction with the construction of the extension of Berkeley Avenue through the redevelopment site to Washington Avenue, the traffic signal currently at Mizzen Avenue will be relocated to the new intersection (see white arrow in image above). Mizzen Avenue is expected to then either be controlled with a stop sign or converted to a double cul-de-sac (see illustration below).





iii. Road Widening – Left Turns

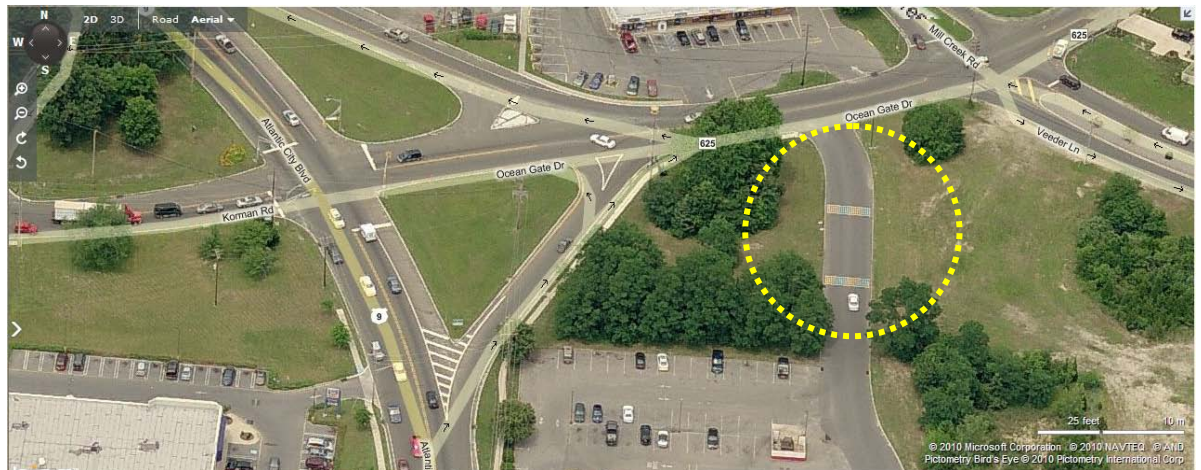
What promises to be the most costly road improvement associated with the Phase 1 buildout of the Town Center is the proposed widening of Route 9 utilizing the Route 9 frontage of the Town Center Redevelopment Area to gain the necessary width for two lanes in each direction and a two-way center left turn lane. The cost of this work, as well as the other Phase 1 improvements described above, is expected to be borne by the redeveloper of Phase 1 of the Town Center.



b. Town Center 2

There are several roadway improvements anticipated as a result of the buildout of the Secondary Town Center (TC2), although more detailed capital improvement needs will not be determined until the developer of Berkeley Plaza (Shop Rite Shopping Center) develops a detailed concept site plan in accordance with the new TC2 Overlay regulations that will be based upon the new Center designation and increased development potential generated as a result of Plan Endorsement and NJDEP Rule Amendment. Much will depend on the NJDOT and the proximity of traffic signals between the Route 9 intersections with Korman Road, Frederick Drive and Moorage Avenue. The redevelopment of the shopping center's circulation system around a new signalized entrance at Frederick Drive is now possible due to the acquisition and removal of a former gasoline filling station that previously occupied the land needed for the entrance road.

One of the substantial benefits of a new signalized entrance to the shopping center at Frederick Drive is the reduction of left turns through the elimination of the existing shopping center entrance at Ocean Gate Drive that will improve vehicular safety (see yellow circled area in image below).



i. Signalization at Frederick Drive

The developer of the shopping center has advised that he had previously engaged NJDOT regarding a new signal at Frederick Drive and had demonstrated a warrant, but the signal was rejected by the agency because the intersection is less than 1000



Top Image – Existing Intersection of Ocean Gate Drive with Veeder Lane and Mill Creek Road facing south;
Bottom Image – Roundabout with drive cut reductions



feet from the current signal at Moorage Avenue. Moving the Moorage Avenue signal south to the next intersection at Anchorage Avenue would divert significant traffic generated by the Little League Complex on Moorage through a residential neighborhood. The Township and the developer expect to appeal to NJDOT as a component of Plan Endorsement to reconsider the approval of the traffic signal at Frederick based on the overall concept plan for TC2 that would generate substantial benefit to public safety, especially for pedestrian movement between the retail uses at the shopping center and the existing and future infill high density housing along Frederick, as well as turning movements generally around the shopping center site.

ii. Roundabout at Route 9 & Korman/Ocean Gate Drive

Improvements to the intersection of Korman Road and Ocean Gate Drive with Route 9 were recommended in the Route 9 Corridor Master Plan and were expected to become associated with the buildout of the Berkeley Plaza (Shop Rite) site when the Secondary Town Center is designated by the State Planning Commission and recognized by NJDEP as a CAFRA Center. The NJDOT is currently installing sidewalks, crosswalks and re-signalizing the intersection with a left turn phases from Korman and Ocean Gate Drive onto Route 9, so it is uncertain if they will entertain one of the two roundabout concepts proposed in the Route 9 Corridor Master Plan. The \$345,000 state-funded project will also reconfigure and restripe Route 9 south of the intersection to provide for two thru-lanes in each direction for a distance of 300 feet. The existing traffic signals will be reconstructed to accommodate the new lane configuration.

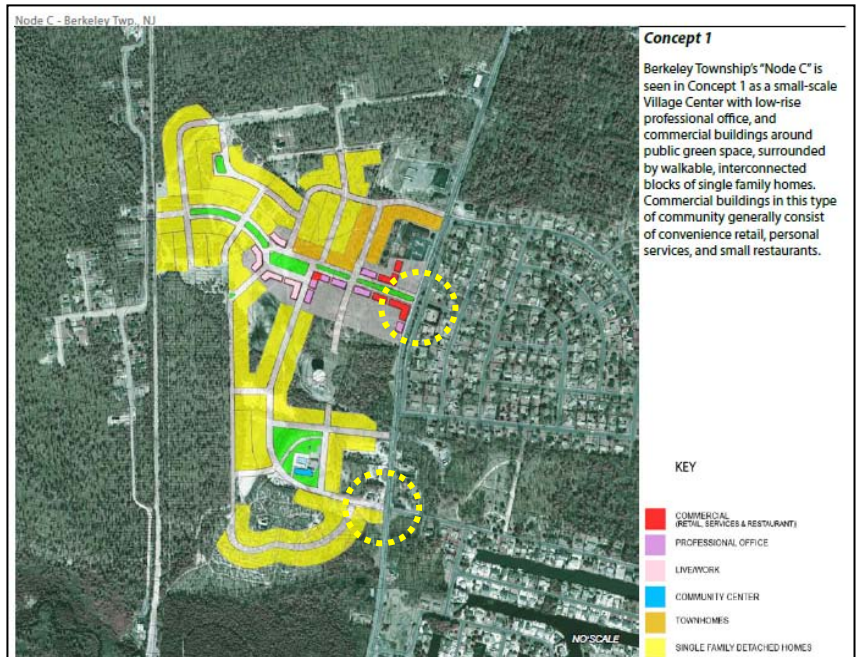
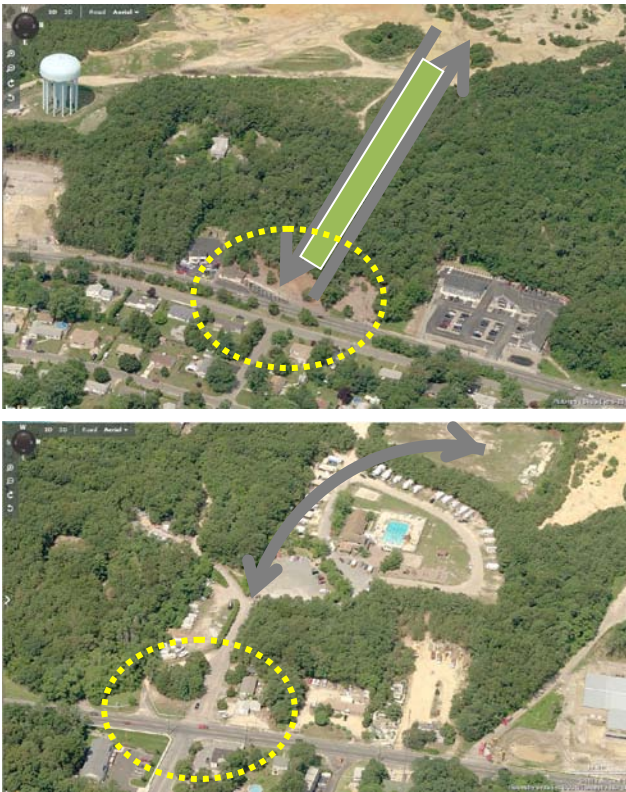
iii. Roundabout at Ocean Gate Drive & Veeder Lane/Mill Creek Road

Along with the roundabout at the main intersection at Route 9, the Route 9 Corridor Master Plan proposed a much smaller roundabout at the awkward intersection of Ocean Gate Drive, Veeder Lane and Mill Creek Road. This intersection currently operates at a high volume with 35mph speed limits on Veeder Lane and Mill Creek Road and 40mph speed limit on Ocean Gate Drive, making left turns on Ocean Gate Drive particularly difficult, especially during peak hours with the offset pattern of driveway cuts being too close to the intersection. A roundabout would improve the alignment and be a self regulating traffic control mechanism.



- c. Node C
 - i. Signalization at Route 9 and Harbor Inn Road

The buildout of Node C will occur along a stretch of Route 9 which is considered by the Route 9 Corridor Master Plan to be less congested than the sections along the two Town Centers to the north. However, it can be expected that there will be a need for improvements to the intersection of Route 9 and Harbor Inn Road if that becomes the primary entrance road to the Node development, including the possibility of a traffic signal.

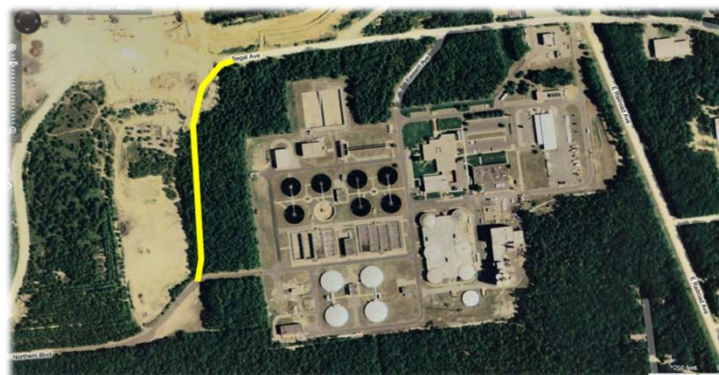
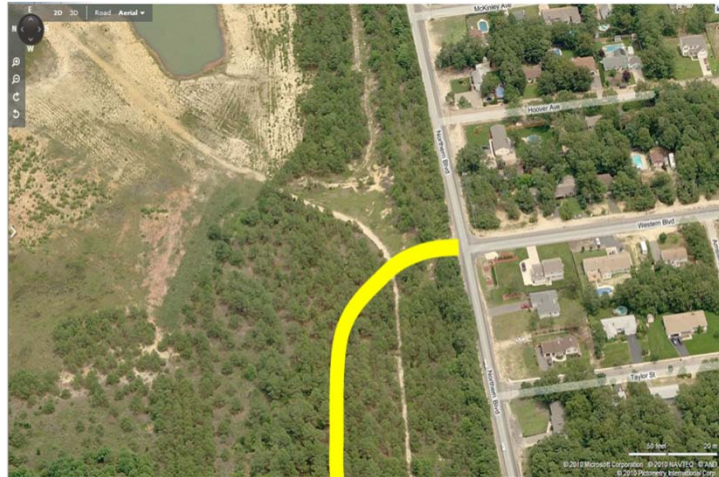


2. Other Circulation Improvements

The Berkeley Township Land Use and Circulation Element proposed several other circulation capital projects, including the Western Boulevard Extension, the extension of Northern Boulevard to Hickory Lane, the construction of the Berkeley segments of the Barnegat Branch Trail & connections and pedestrian improvements along Route 9.

- a. Western Boulevard Extension





Western Boulevard Extension has been identified as a critical link between the Pinewald and Bayville sections of Berkeley Township for decades as a way of separating through traffic from local traffic along the Route 9 corridor in Berkeley. The road is essential to the ability of the second phase of the Berkeley Town Center to support additional development beyond that which can be handled with the improvements to be installed by the redeveloper of Phase 1 of the Center. The proposed road would begin at the current terminus of Western Boulevard at Northern Boulevard and follow an alignment through the New Jersey Pulverizing (sand extraction site) property and connect to the Berkeley Town Center Redevelopment Area, most likely at the proposed Berkeley Avenue Extension to Washington Avenue. The North Jersey Transportation Planning Authority amended its Transportation Improvement Plan (TIP) on May 10, 2010 to include Western Boulevard Extension as a project for Federal funding for the alternative routes analysis and design development. While the Circulation Plan (Map 4) shows two possible alignments for the road (the original direct connection between Northern Boulevard and Gladney Avenue and the alternative extension of Northern Boulevard through the dirt roads of the NJ Pulverizing Site and then parallel to the Barnegat Branch Trail to the Town Center), it now appears most likely that the alignment of the road will be determined by the least possible disturbance of habitat and wetlands and will most likely hug the Beachwood Borough border and link up with the Berkeley Avenue Extension to reach Route 9 (see images at left).

b. Northern Boulevard/Hickory Lane Extension

The easterly end of North Boulevard currently ends at the entrance to the Ocean County Utility Authority's Water Quality Control Facility, which also has a driveway at the end of Hickory Lane, which is the road that provides access to the

proposed Light Industrial Node and Receiving Area. An existing

The images below, both taken from the Barnegat Branch Trail page on the Ocean County Planning Department website (<http://www.planning.co.ocean.nj.us/bbt.htm>), show a segment of the Berkeley trail corridor (left) that will eventually be improved to resemble the completed segment in Waretown (right). The map of the overall trail system is shown below.

unimproved right-of-way called Segal Avenue comes within a thousand feet from the entrance road to the plant. The grant of a roadway easement by the OCUA and the improvement of Segal Avenue into a public roadway would provide an outlet from Hickory Lane to Northern Boulevard

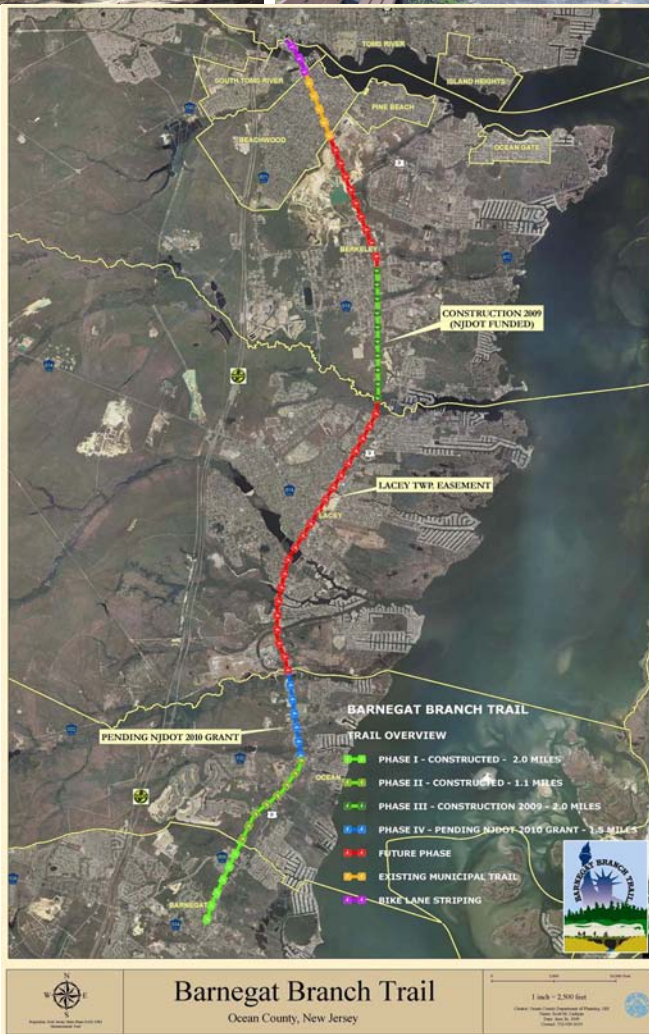
and enable the separation of industrial traffic from the residential traffic along the remainder of Hickory Lane.

c. Barnegat Branch Trail (BBT) & connections

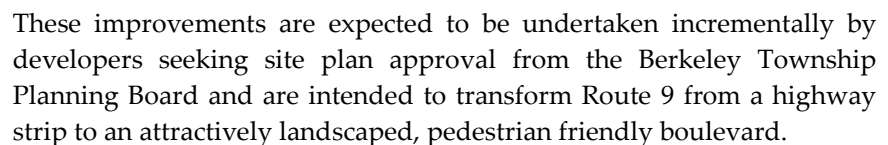
The BBT is a 15.6-mile linear “rail-to-trail” project that will extend from Barnegat Township to Toms River Township. The public trail, which lies primarily along the abandoned Barnegat Branch Division of the Central Railroad of New Jersey (CNJ), will be developed and constructed in phases. One of those funded phases is Phase III, which begins at a trailhead in Dudley Park at the existing parking area and connects to the Berkeley side of the Cedar Creek, where the rail-trail will be improved to Maryland Avenue. The remainder of the Berkeley portion of the BBT is identified as a “Future Phase”, which essentially means that it requires a source of funding.

According to the BBT web page, the trail surface for the trail is 10' wide stone dust, “*which ensures ADA accessibility and a more natural-looking trail.*” All at-grade street crossings are to be improved with advanced warning lighting and push button signaling, and wayfinding and informational signs are to be located at all trail access nodes.

Connections to the BBT of internal pedestrian and bicycle pathway systems within both the Berkeley Town Center and Node C concept/site plans will be required, with a requirement that the developer(s)/redeveloper(s) coordinate the connections with Ocean County so that they enhance the effectiveness of the BBT as a transportation corridor.



Amendments to the Berkeley Township Land Development Ordinance (LDO) have been drafted consistent with the 2008 Land Use and Circulation Plan Element of the Berkeley Township Master Plan. These amendments include new regulations for the Highway Business Zone that will permit the mixed-use development contemplated for TC2 and Node C, as well as a more prescriptive set of design standards for the Route 9 Corridor to enhance pedestrian and bicycle mobility. A sketch taken from the draft amendments is shown below.



Based upon the previous narrative regarding the need for water infrastructure to support the buildout of the Receiving Areas, it is anticipated that a Capital Improvement project will be required to include the following improvements:

-

TDR), but sized to meet the needs of Phase 2 of the Town Center, which is a TDR Receiving Area that would be developed upon the construction of Western Boulevard Extension. Cost of necessary improvements is estimated by Aqua NJ to be \$250,000 (\$150,000 to drill the well and \$100,000 for piping and equipment upgrades to the existing pump station located within the Town Center Redevelopment Area).

2. New well to service Town Center 2 to be drilled at the site of the former Aqua NJ pump station on Sherman Avenue within the same block as the shopping center. The former well and pump station were deactivated and the pump station removed based on an issue with water quality. However, Aqua would test the deeper Piney Point aquifer and drill a new well subject to NJDEP approval of water quality. They would build a new pump station on the same site. Total cost is estimated to be \$450,000.
 3. The existing industrial park within the Light Industrial Node on the south side of Hickory Lane is within the Berkeley Township MUA service area and is served by BTMUA currently. The portion of the Light Industrial Node north of Hickory Lane is within the Aqua NJ service area. An Aqua NJ water main currently extends up Hickory Lane to serve an existing residential subdivision. It is estimated that the main would need to be extended approximately 1500 feet to reach the north side of the Light Industrial Node. Aqua NJ estimates the cost of constructing new water mains to be \$80 per lineal foot, which would be \$120,000 to bring water to the northern half of the Light Industrial Node site.
 4. Node C improvements for water supply are currently being analyzed by the Berkeley Township Municipal Utilities Authority (BTMUA) to determine if additional well or water storage tank will be needed to cover the additional development that would occur through the transfer of development allowed through the Corridor Node Overlay bonus density provisions.
4. Wastewater Infrastructure Improvements

Based upon the previous narrative regarding the need for wastewater infrastructure to support the buildout of the Receiving Areas, it is not anticipated that a Capital Improvement project will be required. The OCUA verified this assessment in a letter, dated November 3, 2010, which stated *“Please be advised that as of October 1, 2010, there are 5.407 mgd of remaining treatment capacity at the Central Water Pollution Control Facility. This is based upon flows currently received at this facility and projects approved by this Authority, but not currently connected. Based upon review of the provided Capital Improvement Plan & Utility Service Plan, last*



revised October 12, 2010, the Authority can accommodate the (proposed project) wastewater demand”.

5. Stormwater Infrastructure Improvements

Based upon the previous narrative regarding the need for stormwater infrastructure to support the buildout of the Receiving Areas, it is not anticipated that a Capital Improvement project will be required. Moreover, it is expected that alternative, sustainable, Best Management Practices (BMPs) will be required by the Township in their review of specific projects and such measures, such as the incorporation of a network of small rain gardens, bio-retention basins, cisterns and/or rain barrels, green roofs, etc., will reduce or eliminate the need for traditional stormwater retention/detention basins in new development projects.




ESTIMATED COSTS

The estimated Capital Improvement Plan for the four Receiving Areas are tabulated below.

Town Center – Phase 1: While not a designated Receiving Area for purposes of accepting TDR Credits, Phase 1 of the Berkeley Town Center includes major infrastructure improvements for along a segment of Route 9 of approximately three quarters of a mile and involving several intersections. These off-tract improvements are critical to setting the stage for the Phase 2 improvements, which will hinge on the construction of the Western Boulevard Extension to relieve volume from Route 9 and enable the Phase 2 Receiving Area to build out. The cost estimates for the Town Center Phase 1 improvements, based on conceptual plans prepared by the redeveloper's traffic engineer is summarized in Table 15 below. The Five-Year Capital Plan shown below the Route 9 Roadway Improvements Cost Estimate projects that the total costs of the Route 9 widening and related improvements are anticipated to be incurred in Year 1 and Year 2. Year 1 capital costs also include the construction of Berkeley Avenue through the redevelopment site and the drilling of a new well.

Table 15
Cost Estimate for Town Center Phase 1 Capital Improvements

REC Centers, Inc. NJSH Route 9 & Gladney Avenue Berkeley Township Ocean County, New Jersey ATDE Project No. AJ07086		 ATLANTIC TRAFFIC & DESIGN ENGINEERS, INC.
Proposed NJSH Route 9 Roadway Improvements		
Preliminary Opinion of Probable Construction Cost		Date: 05/21/2010
A. NJSH Route 9 Roadway Improvements		\$1,000,000.00
B. Two (2) NJSH Route 9 Traffic Signal Installations		\$500,000.00
C. NJSH Route 9 Utility Relocations		\$350,000.00
D. NJSH Route 9 Drainage Improvements		\$50,000.00
E. NJSH Route 9 Maintenance & Protection of Traffic		\$75,000.00
Subtotal		\$1,975,000.00
Contingency	10%	\$197,500.00
GRAND TOTAL		\$2,172,500.00

Notes:

1. This preliminary cost estimate is based on the NJSH Route 9 Conceptual Roadway Improvements Submission prepared by our office, dated October 1, 2009.
2. Roadway improvements include the following: site clearing and grubbing, saw cutting, asphalt and curb removal, full depth pavement construction, curb construction, topsoil fertilizing and seeding, and installation of signage and striping.
3. This estimate does not include design and permitting costs associated with the improvements.



Table 15 (cont)

TOWN CENTER-PHASE 1 CAPITAL PROJECTS	Year 1	Year 2	Year 3	Year 4	Year 5	Responsible Party
1. Berkeley Ave Extension	\$1,200,000	0	0	0	0	Phase 1 Redeveloper
2. Route 9 Intersections (2)	\$500,000	0	0	0	0	Phase 1 Redeveloper
3. Route 9 Widening	\$836,250	\$836,250	0	0	0	Phase 1 Redeveloper
4. New well & equipment	\$250,000	0	0	0	0	Phase 1 Redeveloper
TOTAL	\$2,786,250.00	\$836,250.00	0	0	0	

Table 16
Cost Estimate for Town Center Phase 2 Capital Improvements

TOWN CENTER-PHASE 2 CAPITAL PROJECTS	Year 1	Year 2	Year 3	Year 4	Year 5	Responsible Party
1. Western Blvd Extension	\$1,100,000	\$1,100,000	\$1,100,000	\$3,000,000	\$3,000,000	Ocean County
2. BBT Maryland Ave. to Beachwood (+/- 2mi.)	0	\$350,000	\$350,000	0	0	Ocean County & Phase 2 Redeveloper(s)
3. Route 9 Pedestrian Imp.	\$61,000	\$61,000	0	0	0	Phase 2 Redeveloper(s)
TOTAL	\$1,161,000.00	\$1,511,000.00	\$1,450,000.00	\$3,000,000.00	\$3,000,000.00	

Table 17
Cost Estimate for Town Center-2 Capital Improvements

TOWN CENTER 2 CAPITAL PROJECTS	Year 1	Year 2	Year 3	Year 4	Year 5	Responsible Party
1. Frederick Drive Signal	\$250,000	0	0	0	0	TC2 Developer
2. Korman Road Intersection	\$350,000	0	0	0	0	NJDOT
3. Veeder-Mill Creek Intersection	\$200,000	0	0	0	0	TC2 Redevel & Ocean Cnty
4. Route 9 Pedestrian Imp.	\$95,000	0	0	0	0	TC2 Developer
5. New well & pumping station	\$450,000	0	0	0	0	TC2 Developer
TOTAL	\$1,345,000.00	0	0	0	0	

Table 18
Cost Estimate for Node-C Capital Improvements

NODE C CAPITAL PROJECTS	Year 1	Year 2	Year 3	Year 4	Year 5	Responsible Party
1. Harbor Inn Rd Intersection-Signal	\$250,000	0	0	0	0	Node C Developer(s)
2. New Entrance Blvd Signal at Route 9	0	\$250,000	0	0	0	Node C Developer(s)
3. Route 9 Pedestrian Improvements	\$42,500	\$42,500	0	0	0	
TOTAL	\$292,500.00	\$292,500.00	0	0	0	



Table 19
Cost Estimate Light Industrial Node Capital Improvements

LT. INDUSTRIAL NODE CAPITAL PROJECTS	Year 1	Year 2	Year 3	Year 4	Year 5	Responsible Party
1. Hickory Lane Exten.	\$900,000	\$900,000	0	0	0	Berkeley Twp; Ocean County
2. Hickory Lane-Rt 9 Signal	\$250,000	0	0	0	0	Shared – LI Node Developer; Hickory Estates Developer
3. Water main extension	\$120,000	0	0	0	0	LI Node Developer
TOTAL	\$1,270,000.00	\$900,000.00	0	0	0	

Cost Sharing Formula

As most of the anticipated capital improvements associated with the buildout of the four Receiving Areas are roadway related with associated pedestrian walkways, the most conventional method of sharing these costs with regard to distributing them among future developers would be based upon the number of trips to be generated by each development as a percentage of the total number of trips accommodated by the improvement. For Phase 2 of the Berkeley Town Center, the principal improvement is the construction of Western Boulevard Extension at an cost estimated by the County Engineer to be 6 million dollars. This future County road is expected to be funded by a combination of Federal and County sources, but the last segment of the road, approximately 2,000 feet of around 2 miles of new road, would be constructed by the redeveloper of Phase 1 of the Berkeley Town Center. Actual contributions by future developers of Phase 2 are therefore difficult to determine at this time, but it is likely that contributions will be negotiated in future redevelopment agreements based upon the proportional number of trips generated by each project that will use the new road. Likewise, contributions to the cost of the final mile of the Barnegat Branch Trail may be negotiated with future developers of Phase 2.

However, for Town Center 2 and the Light Industrial Node, the capital improvements are expected to be made by the owners of the Berkeley Plaza (Shop Rite) shopping center and the industrial park on Hickory Lane, respectively. To the extent that other subsequent developments will benefit from the listed capital improvements, it is expected that recapture agreements will be used.

The cost of the two traffic signals anticipated for Node C are expected to be borne by the developers incrementally through the payment of an escrow fee to the Township designated for each project. Phases of development would be linked to the trip generation that would trigger the need for the signalization and payments made by developers of smaller projects would be applied to the overall cost of the two signals. If Node C is to be developed by a single developer, the traffic signal improvements would be required as part of the upfront site improvements and the escrow would not be necessary.

